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THE AUTOMOBILE

WEEKLY — NEW YORK — SATURDAY, JANUARY 10, 1903 — CHICAGO — 10 CENTS

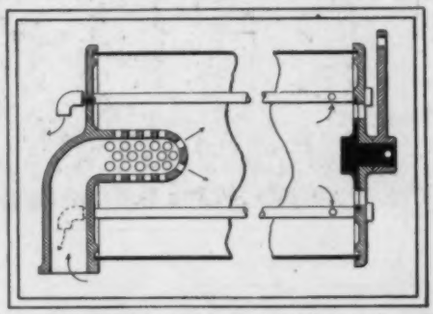
Large One-Seated Cleveland Car.

THE widespread desire for an automobile of few parts and easily handled controlling mediums, is now coupled with the demand for sufficient size, weight and strength to endure the hard knocks of constant and rough road service. To meet this dual requirement has been the object of the makers of the "Cleveland Roadster," made by the Cleveland Automobile Company. Its rather large dimensions are coupled with a simple single-cylinder power equipment of the type commonly used in smaller vehicles. The wheel base is 6 feet. The gauge is of standard width. Upon the 28-inch wheels of artillery pattern is mounted a rectangular frame of 2¼-inch angle iron. The rear axle is solid and to it is fastened one wheel and one-half of the spur gear differential. The other wheel is keyed to a sleeve that takes the other half of the differential. The front axle is tubular and the frame is supported on stout semi-elliptical springs of greater than ordinary length. The steering knuckles are slightly raked. Upon this frame, which by reason of its length and spring arrangement tends to comfort in rough riding, is placed a body of such conformation that the seat is almost exactly midway between the two axles. The seat is wide and deep as on the larger cars.

"CLEVELAND ROADSTER." SINGLE-CYLINDER GASOLINE MOTOR CAR.

The engine is a plainly designed and simply constructed single-cylinder motor. In the plan view of the chassis the disposition of the motor is clearly shown. While

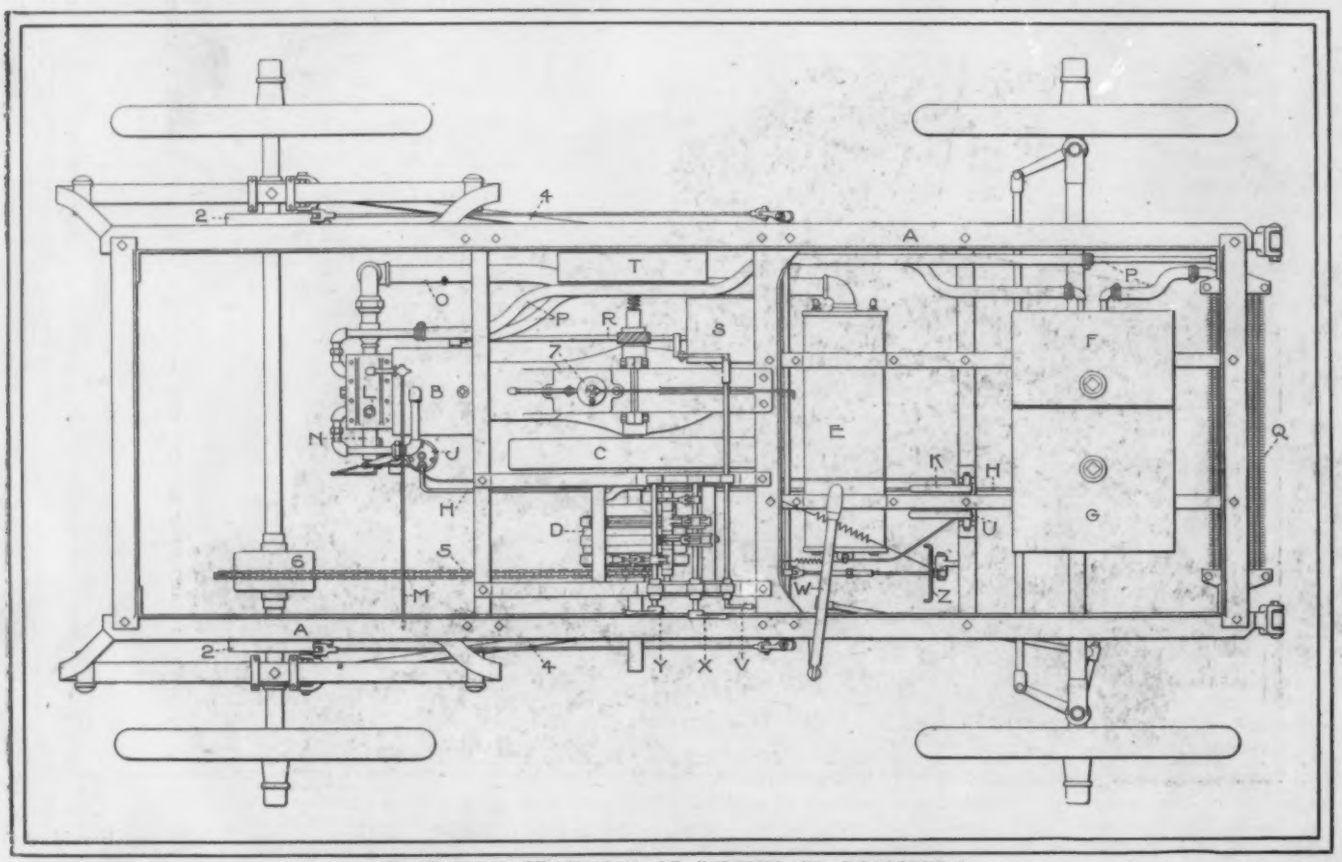
the crank case is about under the middle of the car, the cylinder and head of the motor are far enough to the rear to be well exposed by lifting the cover board of the rear body. Current for the jump spark system of ignition is furnished by batteries and induction coil disposed at the left side of the crank case. The two-to-one cam shaft for actuating the exhaust valve and sparking mechanism is driven by a worm gear. The power transmission mechanism includes a two-speed and reverse clutch on the right end of the extended motor shaft. This clutch is a special feature of the machine. In exterior appearance and in operation it is similar to other clutches of its type, but it differs in being without internal tooth gears. Its construction is shown in the accompanying sectional view, from which it is noticeable that the planet gears transmit, both for the reverse and for the slow speed forward-drive, through spur gears mounted on axle sleeves which carry the respective brake bands for reverse drive and for applying the brake. The gears are enclosed and run in a bath of oil. The high speed is secured, as ordinarily, by a shaft clutch locking the elements together. The final drive is by chain to the differential gear on the live rear axle, and the motor is started with a crank applied direct to the motor shaft which is extended beyond the right side of the frame for this purpose. Both the gasoline and water tanks are carried under the front box dash, being conformed to the shape of the box and closely adjacent to each other. The gasoline pipe extends straight under the frame to a float feed carbureter placed close to the cylinder head on a bracket integral with the inlet pipe. The water circulation pipes are arranged to feed the water into the cylinder jacket and take the heated water from the head jacket, and thence to the radiator and the tank. The pump is driven by means of a flexible universal coupling from the left end of the motor shaft. The water cooler or radiator is hung vertically in front under the vehicle frame and comprises three banks of flanged tubes as in larger cars. These tubes, to insure continuous circulation of the water, are connected coil fashion instead of by the open heads sometimes used. The muffler is hung underneath the frame in front of the seat. It contains a large open chamber in which the gases enter through a perforated nozzle. The egress of the exhaust from the chamber is through four small pipes which discharge downwardly at the left end of the muffler. The opposite end is pierced by six holes that are covered by a correspondingly pierced plate which, being mounted rotatably, can be turned so that its holes will register with those in the end of the muffler and thus afford a direct open exhaust for the gases, equal in effect



MUFFLER WITH CUT-OUT DEVICE.

to what is commonly termed "cutting-out" the muffler for extra speeding or heavy hill work.

The mediums of control are distinct and separate. In other words, the throttle and the spark shifter are operated separately. The fuel regulator on the carbureter is backed by a spring to draw it to its normal position when released and is connected by a light rod to a foot pedal. A closely adjacent foot pedal is connected to the spring-governed lever that actuates



PLAN VIEW OF CHASSIS OF "CLEVELAND ROADSTER."

A Main frame.
B Motor.
C Fly-wheel.
D Transmission gear.
E Muffler.
F Water reservoir.
G Gasoline tank.
H Gasoline pipe.
J Carbureter.
K Throttle pedal.
L Spark plug.
M Compression cock.
N Inlet pipe.
O Exhaust pipe.
P Water pipes.
Q Water cooler.
R Motor cam shaft.
S Induction coil.
T Batteries.
U Muffler cut-out pedal.
V Spark lead lever.
W Steering lever.
X Speed lever.
Y Transmission gear brake lever.
Z Axle brake pedal.
2 Band brakes.
4 Distance rods.
5 Drive Chain.
6 Differential gear.
7 Lubricator.

the muffler-closing dial so that the latter may be opened independently or may be opened at the time that the throttle pedal is pressed downward to increase the fuel charge by pressing both pedals with the same foot. This allows the right foot to be at all times ready to engage the brake pedal that controls the two rear axle double-acting band brakes.

The spark lead is independent of throttle regulation, being controlled by a small hand lever which, through a crank on the left end of its shaft and a connecting link, actuates a short crank arm on the cam shaft. The speed and reverse lever and the transmission clutch brake lever occupy the usual position at the right of the seat.

The sight feed lubricator on the motor crank case is controlled by a cranked rod extending forward through the seat curtain. The steering is governed by a side steering post fitted with the usual hinged tiller.

The machine is finished is deep red and green, the body being of the former color and the running gear, trimmings and upholstery of the latter. A few brass parts heighten the effect. The regular wheel equipment is either wood or Midgley artillery pattern with detachable tires.

POSTSCRIPT.

In this connection the publishers of THE AUTOMOBILE desire to announce that they consider it contrary to the best interests of readers and advertisers in general to publish illustrations and descriptions of new models of automobiles on the title page The exception made in giving the foregoing article its prominent position is due to the existence of a verbal, but irrefutable, contract which was entered into several months ago by a business representative of this publication who did not appreciate the necessity for adhering strictly to the principles adopted when "The Automobile" and the "Motor Review" were consolidated under new management. These principles absolutely exclude the insertion of reading matter for pay or in consideration of advertising patronage.

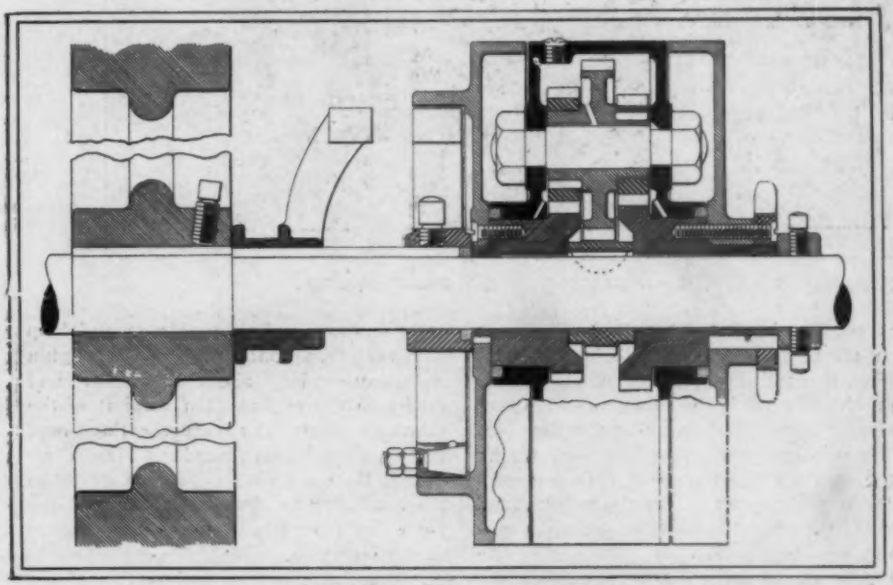
So as to prevent all possible misunderstanding in the present case, it should be stated that we know of no reason why the machine described should not be fully entitled to the public's favorable notice. It is not the description in itself which is objectionable, but only the exceptional prominence accorded it, which seems to suggest that a claim for superiority over other automobiles has been advanced or endorsed by the editorial management. THE AUTOMOBILE considers such endorsements of the products of the industry—whether direct or implied—wholly outside its province, and indeed beyond the proper sphere of any publication. Each reader must do his own reasoning on all questions of preference, and it is believed that the facts presented week after week in these pages, and especially the reports of public tests, furnish a safe foundation for the required discrimination between good, bad and indifferent automobiles.

With this explanation it will be readily understood that this postscript is neither for or against the manufacturer and his product, but serves solely to explain a conspicuous departure from a rule which THE AUTOMOBILE considers essential to good and impartial newspaper work, and from which it will not willingly deviate.—The Editor.

NON-ARCING CONTROLLER.

Non-Arcing Controller.

The little instrument here shown is a non-arcing controller for electric vehicles invented by Karsten Knudsen, of Chicago. It is impelled from one contact to another by a large spiral spring that prevents it from stopping between fingers. It has four speeds forward and reverse. It is a very compact and refined piece of mechanism, weighing but 8 1-2 pounds. It can be, of course, located beneath the seat or under the body. Several controllers similar to this one are in use on electric vehicles in Chicago.



CLUTCH AND GEARS OF CLEVELAND TRANSMISSION SYSTEM.

Automobile in Cotillion Figure.

One of the prettiest cotillion figures ever given on the floor of a ball room was the first figure held on the occasion of the second annual ball given by the Z Z Club in Houston, Texas., recently. When the figure was announced Miss Bessie Kirby appeared in a beautifully decorated electric automobile, and, assisted by little Misses Anna Beth Chew and Pansy Larkin, distributed the favors, miniature automobiles, to those who were to participate in the cotillion.

When the distribution was completed the vehicle whirled noiselessly into the center of the room, the lights were dimmed and the fair driver, under the rays of a calcium light, held aloft a wand gleaming with electric lights, from which were suspended scores of ribbon streamers, which were caught by the dancers and the evolutions of the figure were begun.

The Prescott Steam Carriage.

BY HERBERT L. TOWLE.

The Prescott steam carriage is a good representative of the American steam carriage built on what may be best described as the conventional lines of to-day. In weight it occupies an intermediate position between the light steam runabout, which at present has practically disappeared, and the as yet hardly visible steam touring car, in other words, it weighs with empty tanks not quite 1,100 pounds, and follows other vehicles of its class in having a short wheel base and high center of gravity. Its running gear is of relatively substantial construction, and its boiler is large enough to give an abundance of steam at all times. In its operation more reliance is placed on the driver than on automatic devices, but as much as possible is done by the use of automatic lubrication, reliable gauges for both boiler and tank, a fusible plug in the boiler, and steam, water and air pumps to minimize the work required in the various processes.

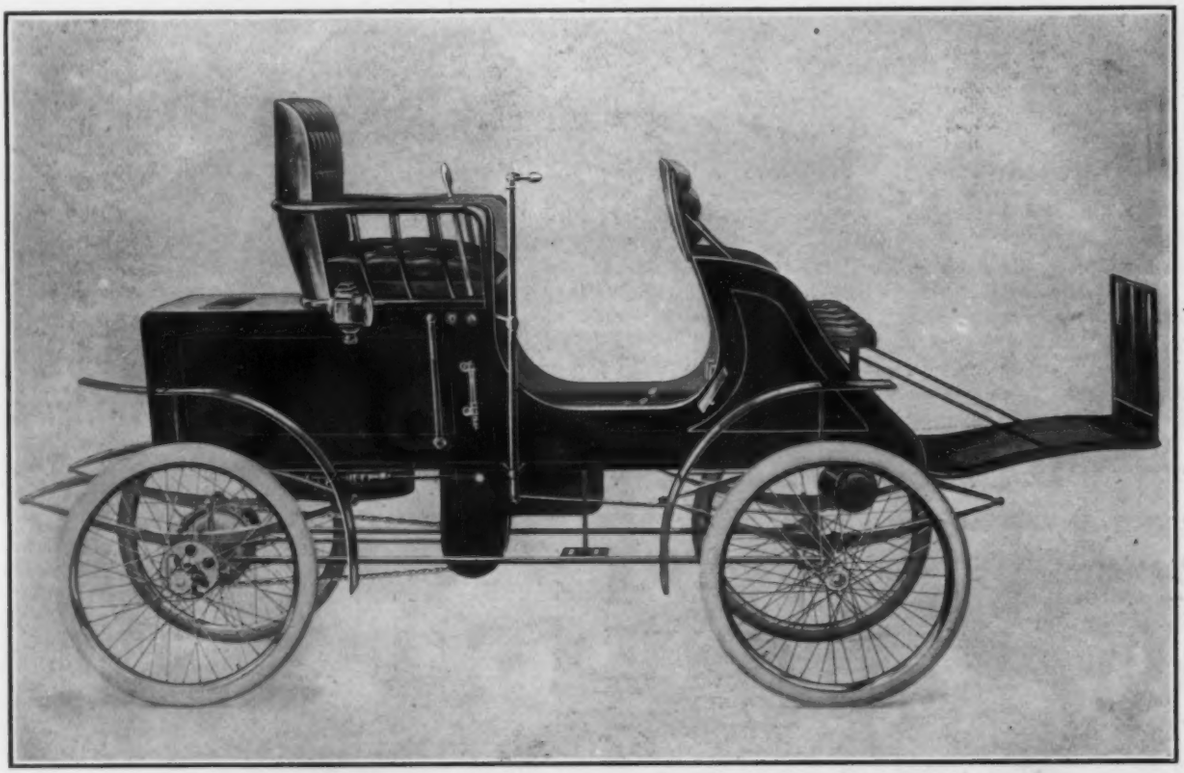


Fig. 1—PRESCOTT STEAM CARRIAGE, WITH FOLDING FRONT SEAT OPENED.

Coming to details, the general form of the running gear is shown in Fig. 3. The axles are tubular and both of them are trussed. The reaches are of hickory, rivcted into fish mouth ends of tubing, which ends terminate in studs passing through swivel holes in the spring seats. The front axle has a truss, *A*, made of steel rod, with its ends slanting upward and entering the lower arms of the yoke forgings, where nuts are screwed on them. Two threaded struts, one under each spring seat, are used to tighten the truss rod. The rear axle truss rods have button heads on their inner ends and screw into the casings of the outer roller bearings. The fixed tubular portion of the rear axle is made in two halves, joined by U-shaped forgings above and below the differential, as shown in Figs. 4 and 5. A partial section of the rear axle and differential is shown in Fig. 5. American roller bearings are used, and the outer ends of the 1 1-8-inch shafts are squared to enter the cast steel rear hubs. The differential is of the spur gear type, and its outer shell is peculiar in that, instead of being split in a fore and aft plane, like most of its kind, it is split in a place of which the axis of the shafts is an element—in other words, along the line xx in the drawing. The two halves are then held together by the rings *B B*. Woodruff keys are used in the main gears of the differential, and dust caps (not shown in the drawing) protect the roller bearings. To get at the compensating gears it is only necessary to slip off the rings *B B*, when all the gears are exposed. If it is necessary to take the axle apart that is quickly done by unbolting the forgings *C C*.

The power equipment includes a regular Mason engine, 2 1-2 inches bore by 3 1-2 inches stroke, a Tonkin "Dry Plate" boiler 16 inches in diameter and 13 inches high, and a burner of the company's own design. The horizontal plate, about three inches below the top of the boiler, designed to catch the water thrown up by ebullition and keep it from entering the steam space, is well known as the characteristic feature of this boiler. The plate is perforated a little larger than the tubes, the narrow annual spaces thus formed permitting the steam to pass up into the steam space above. From the steam space the steam passes first through the regular throttle valve, then through the shut-off valve, from this down through the boiler by way of a tube larger than the regular fire tubes, then through a superheating tube forming a single loop over the fire in the burner to another tube passing up through the boiler. From this it passes at once down and through a second loop over the fire, up once more, and through a superheating loop above the boiler, and finally to the engine. On account of the elasticity of the third superheating loop, no swing joint is found necessary, although the engine is hung from a swivel in the usual way to allow adjustment of distance rod from the bottom of the engine to the rear axle, to keep the chain taut.

A somewhat similar course is pursued by the gasoline on its way to the burner. From the bottom of the tank (a large steel cylinder under the folding seat in front, holding 7 1-2 gallons of gasoline in addition to the necessary air space), the gasoline passes along the left sill and up to

the shut-off near the boiler, just above the top of the latter. Thence it passes downward by way of a tube run loosely

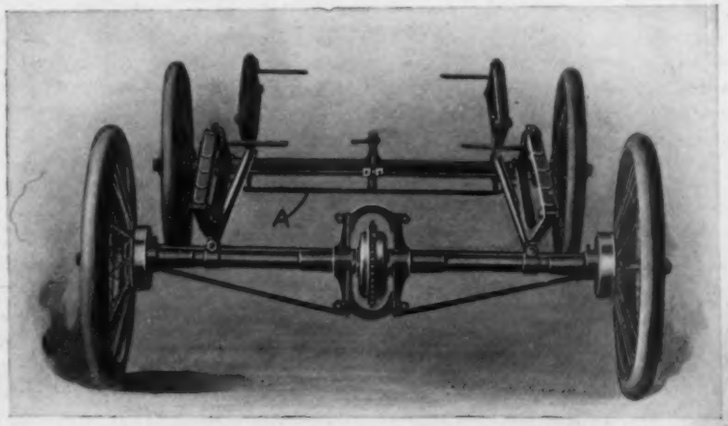


Fig. 3—RUNNING GEAR WITH SPRINGS ATTACHED.

through one of the fire tubes to the bottom of the boiler, through a tube about 7 inches long, which passes just under and supports the two loops of superheating tubes, then up through the boiler, through a union and down once more, then by another tube about 7 inches long, lying directly over the pilot light, and out to the automatic regulator. Altogether the gasoline passes through about 4 feet of heated tubing.

The general arrangement of the burner is shown in Fig. 6. It consists essentially of a T-shaped mixing tube, across which are brazed 14 smaller tubes, each of which has a double row of pin-holes for the escape of vapor. The tubes are spaced a short distance apart to allow air to come up from below, and one of them, marked *D*, has a partition across it about one-third of its length from one end, the shorter portion being pierced with four rows of pin-holes instead of two. This is for the pilot light, and it takes its supply of vapor from an injection nozzle precisely like that of the main burner, but smaller. This feature of the arrangement is seen in Fig. 7. Here *E* is a Locke regulator of standard design, having the diaphragm enclosed at *F* and a connection to the bottom of the boiler at *G*. The gasoline comes from the vaporizing tube at *H* and branches to the right and left in the tube *I*. By the nozzle *J* it goes to the pilot light, which is entirely independent of the automatic regulator, which acts only on the gasoline passing through the nozzle *K* to the main burner. Although the cut does not show it, the gasoline feed to the main burner may be controlled by handle from the seat as well as by the automatic regulator. The effect of this is that the main burner may be shut off altogether when making a stop, leaving the pilot light to keep the gasoline hot in the vaporizing tube, and also, under ordinary circumstances, to maintain the steam pressure. On starting again the main fire lights at once from the pilot light when the burner is turned on. Thus the heat of the boiler and that of the pilot light combine to vaporize the gasoline, and the whole arrangement would seem to be much superior, both to the commoner one of relying on the automatic regulator alone to keep a low fire for maintaining steam, and also to any arrangement depending solely on the pilot light to vaporize the gasoline, as this is more likely to result in trouble from carbonizing and clogging of the interior of the vaporizing tube.

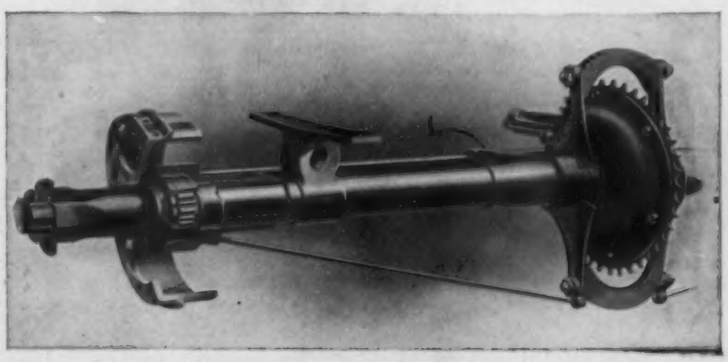


Fig. 4—HALF OF REAR AXLE, SHOWING BEARINGS.

Unlike most burners, this is not open to the air at the bottom at all, but the burner shield closes the bottom in solidly and has openings at front and back, of the form shown in Fig. 8, for admitting air.

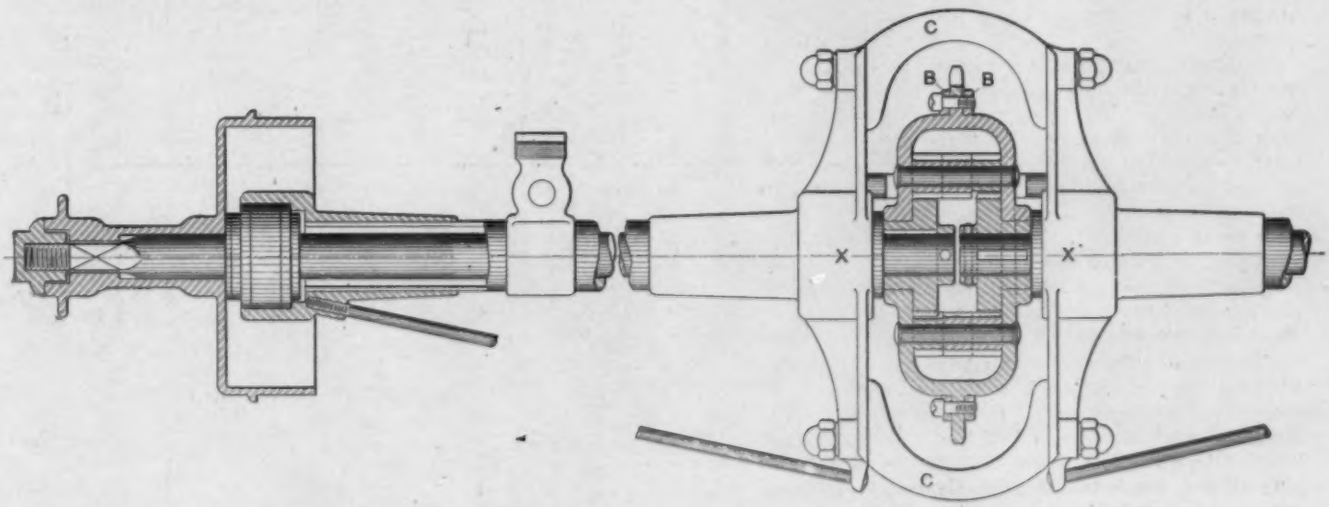


Fig. 5—PART SECTIONAL VIEW OF REAR AXLE AND DIFFERENTIAL WITH DOUBLE U FRAME.

To start this burner the ordinary "torch" is not used, but in its place a little Turner gasoline torch is employed to heat the burner tube *I*, Fig. 7. When this is hot, which is the work of two or three minutes at the most, the pilot light is first turned on and then the main burner by degrees.

The regular boiler feed is supplied by the crosshead pump with which the Mason engine is regularly fitted, but this pump, instead of being attached to the engine, is bolted to one of the cross sills under the foot board, and is operated from the crosshead by a rocking lever which reduces its motion somewhat. The bypass valve controlling the direction of the water from this pump is regulated by hand. As an auxiliary, a Marsh steam water pump is fitted, controllable from the seat. There is also the customary hand pump under the footboard for use in emergencies or to pump the boiler up cold. These three pumps lies close together and take water by branch tubes from one pipe coming from a strainer at the bottom of the tank. Before going into the boiler the water passes through a coil in the muffler, thus heating it at the expense of the exhaust steam.

A Klinger gauge glass is used, this being a glass set in a metal case so that it cannot break, and having a red line on its back after the fashion of spirit thermometers, to show the water level more plainly. A blow-off cock is suitably located to flush the gauge glass and the boiler at the same time.

The boiler is provided with a fusible plug, in the shape of a tube threaded into the bottom of the boiler and reaching up about two inches inside. Connected with the bottom of this tube is an elbow into which is screwed a short length of brass tube closed at its outer end by the plug proper, which is simply a slug of lead. So long as the water level is not too low the plug cannot get hotter than the water, but as soon as the level falls below the upper end of this tube the water in it boils away and it gets the full heat of the fire, melting and blowing out the lead and warning the operator.

The water tank holds 32 gallons, and is provided with a gauge glass the full height of the tank, as the photographs show. As there is no pressure to speak of on this glass, its ends are made tight with rubber washers slightly compressed. To fill the tank a steam inspirator is provided with a length of hose and a strainer so that water can be taken up from troughs or streams without dismounting.

A very commendable feature of this machine is a mechanical lubricator for the engine cylinders. This takes the form of a brass cylinder under the footboard, in which a plunger is slowly moved by a fine pitch screw worked by a double ratchet from the pump rocker arm. By using two ratchet wheels in series, so that a revolution of the engine shaft advances the first wheel one notch, and a revolution of the first wheel advances the second wheel but one notch, the feed is made as slow as desired, and one filling of this pump will last the engine about 75 miles. A tank is provided for refilling this cylinder, a matter of a couple of minutes. Because of the regularity of the oil feed the company claims to have found no difficulty in fitting condensers to their cars, though this is not a regular feature at present. For oiling the other bearings of the engine another tank is provided with wick feeds to separate tubes. A removable sheet metal case is provided, enclosing the whole lower portion of the engine and also the pumps, to protect them from the dust of the road.

Unlike the arrangement in most steam carriages, the brakes in the Prescott carriage do not act on the differential, but on the rear wheels direct. The brake

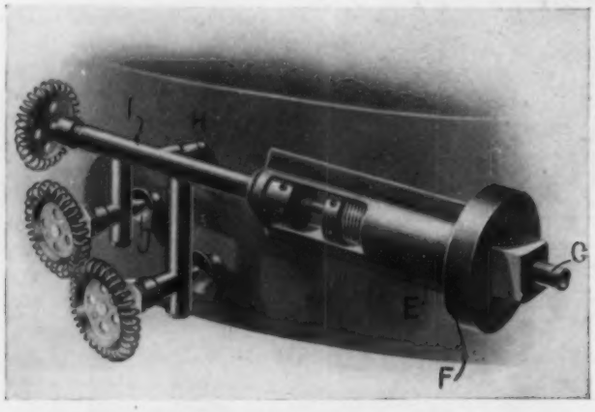


Fig. 7—REGULATOR AND INJECTION NOZZLES.

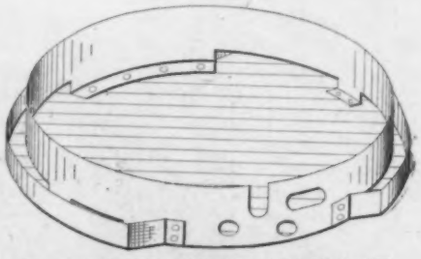


Fig. 8—BURNER SHIELD, SHOWING AIR SPACES.

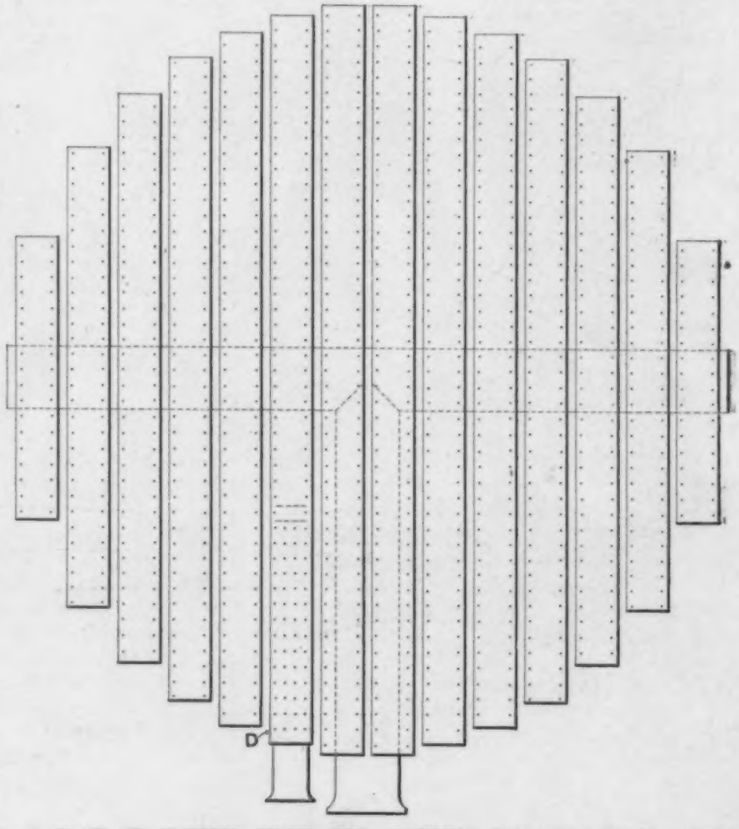


Fig. 6—PLAN OF BURNER FROM TOP, SHOWING T-SHAPED MIXING TUBE.

drums are cast integral with the wheel hubs, and the style of the brake bands, which are double acting, is shown in Fig. 9. They are tightened by bell crank levers

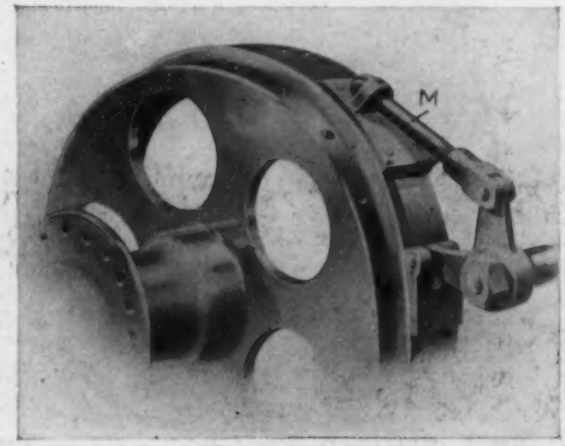


FIG. 9—BRAKE DRUM INTEGRAL WITH WHEEL HUB.

at the ends of a transverse rock shaft supported by arms extending forward from the rear axle. One of these is seen at *L* in Fig. 4. The brakes do not equalize, but are separately adjustable by screwing up the bolts *M*, Fig. 9.

Returning to the running gear, the springs are full elliptic and 34 inches long, giving great flexibility to the body support. The wheels are 28 inches in diameter, with 2 1-2- or 3-inch Fisk tires and extra heavy spokes. The wheel base is 68 inches and the gauge 54 inches, or standard. The front wheels run on ball bearings.

Among the minor details may be mentioned the manner of lagging the boiler. Asbestos lagging is used around the body of the boiler and also around the engine cylinders; but the top of the boiler is covered by a removable sheet iron cap. The outside of this cap is covered with asbestos sheet, and the slots for the various pipes to pass through are closed with "asbestos putty," which is knocked out when it is necessary to remove the cap. A thick sheet of asbestos board is laid on top of this cap, just under the seat.

The control mechanism includes the usual throttle lever, but reversal is effected by a pedal under the left foot. This, of course, gives no opportunity to vary the valve cut-off.

The style of the body, with its characteristic folding front seat shown in both open and closed positions, is well displayed in Figs. 1 and 2. The regular carriage has panel back and spindle sides, and the equipment includes mud guards, acetylene side lights and push button to light up the gauge glass. A feature sometimes useful in firing up is the provision of hinged doors or flaps, one at each end of the cross draft tube, to keep the wind from interfering with the fire. When the carriage is under way the exhaust carries the draft with it downward through the tank. In addition to the regular gasoline tank holding 7 1-2 gallons, there is an auxiliary tank, in the shape of a tube holding 2 1-2 gallons, strapped under the front seat and removable therefrom, thus making the total capacity ten gallons. With all tanks full the total weight of the carriage is approximately 1,400 pounds.

How Gasoline Sells in Germany.

After bitter warfare between the various commercial interests connected with the sale of gasoline and kerosene in Germany, those identified with the Standard Oil Company have finally got the upper hand, largely through extensive pipe lines. This has also resulted in the establishment of a special department for gasoline supply to automobilists by the Vereinizte Benzinfabriken, of Bremen (Association of Gasoline Manufacturers), with an office at No. 40 Kurfuerstendamm, Berlin. The object is to establish gasoline stations on the French system, by which both gasoline and lubricants are sold in sealed canisters only. The Union of German Automobilists have recognized these stations as "official." Gasoline is sold under the trade name "Stellin" and lubricant as "Lubrifin." The price is 35 to 40 pfennig (9 to 10 cents) per liter (quart) of gasoline, and 1 mark 25 pfennig (31 cents) per liter of lubricant. The "Stellin" cans hold 5 and 10 liters, the "Lubrifin" 1 and 2 liters. Foreign motorists visiting Germany can obtain a list of the stations by writing to the Berlin office. At this office there is also a reading room with automobile publications from all countries.

Private Speedway at Lakewood.

While others have been talking, an association at Lakewood, N. J., has been conducting a proprietary speedway eighty feet wide and a mile and a quarter long through the pine woods about a mile north of the town, for the exclusive use of automobiles. While only members of the association are to be permitted its use, it is expected that courtesies will be extended to the Automobile Club of America in any kilometer and mile trials it may hold, either in the line of its annual event or for special trials should these be part of the program for selecting the international cup team. As the course is on private property, there could be no interference on the part of road or local police officials. It is rumored that the Goulds are interested and furnished a large part of the funds

FIG. 2—PRESCOTT CARRIAGE WITH TOP—FRONT SEAT CLOSED.

SNOW NO OBSTACLE TO AUTOMOBILING.

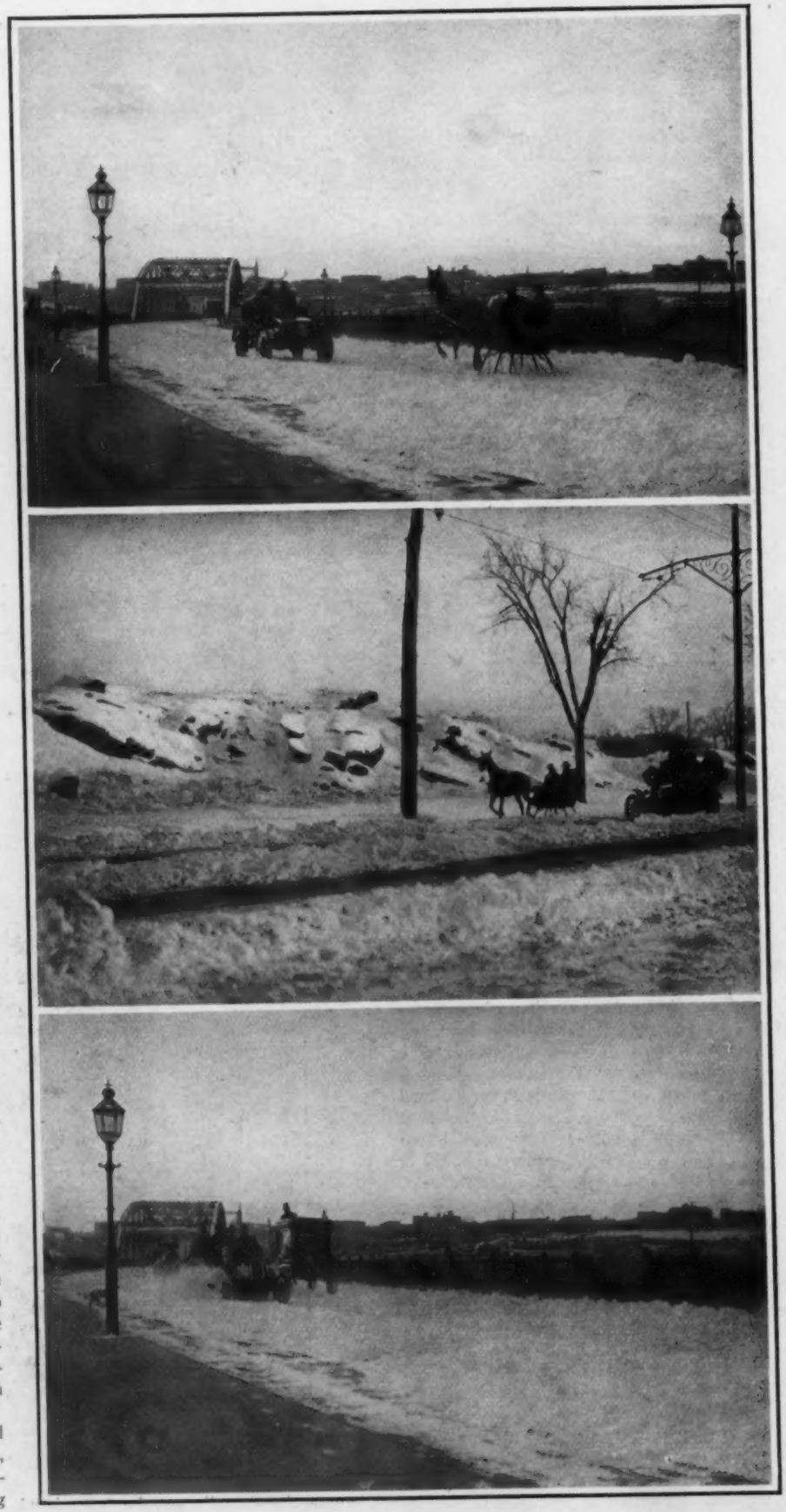
MOTOR VEHICLES RIVAL SLEIGHS.

They Are Used Simultaneously in the Eastern States—Points of Superiority Possessed by the Power Vehicle—Speed and Comfort Without Cruelty to Animals.

Popular as the joltless, swift and gliding motion of the cutter or the bob-sleigh has always been with northern people, and notwithstanding the romantic memories that cling to the moonlight sleigh ride for all whose younger days were spent where snow abounds and abides, severe inroads are now made in the old winter sport of the highway by the modern conqueror: the automobile.

This may be particularly true of the large cities where underheated streets and sidewalks conspire with ambitious street cleaning departments to remove "the beautiful" in double-quick time, but it is likely to come true in country districts as well as soon as the virtues of pneumatic rubber tires are generally realized. With the old-fashioned, plain, parallel wheel bearings squeaking and iron tires floundering helplessly in the white water crystals, the sleigh had much in its favor which now it has lost. It is a question if the modern ball or roller hub bearings have a greater co-efficient of friction than exists between the iron runner and the driver, or even the packed snow. And it is problematic whether the rubber tire, though it contacts with the ground for only a few inches, is not as secure against plain sideslip as the elongated runner. There remains for the sleigh the gliding motion, the jingling bells and the perspiring horses —and the tradition. The automobile sets against these considerations a speedier transit, a French horn, an untiring engine—and the novelty. For that matter it might appropriate the jingling bells and be the better for doing so. The soft, elastic pitching over a set of pneumatic tires does not come far behind the glide of a cutter in giving the esthetic satisfaction of "effort without fatigue." And rising to a humanitarian standpoint for the occasion, the motorist in the snow may well point out that nine out of ten who swing the lash over a pair of horses do not only drive them, but overdrive them when the vehicle is a sleigh. Slow sleighing has no devotees; and the very smoothness of the motion robs the driver of all consciousness of speed and distance, such as the ordinary wheeled vehicle conveys to him through the jolts which jar his body.

Even with the fabled motor sleigh still far away on the dreamy horizon of hope, motorists have plenty of arguments wherewith to fortify their eagerness for braving winter weather and showing the populace that automobiles are indeed seasonable at all turns of the calendar as at all points of



WINTER PLEASURE DRIVING IN NEW YORK—AUTOMOBILES AND SLEIGHS ON McCOMB'S DAM BRIDGE AND JEROME AVENUE.

the compass. Every evanescent snowfall has seen them out on the drives of New York City, threading their way between the chipper sleighs and lording it over them in no uncertain way. For a big touring car in rich, not gaudy, colors, with glass front, and filled with rotund Wall street brokers of the second generation (the first generation is thin!) in bulky habiliments of costly fur, looks decidedly more appropriate and imposing on a snow-clad boulevard than the small and plain sleighs drawn by slim-barreled horses. The gorgeous rigs of Russia, Norway and Canada are not seen where the winter lasts only two months.

On the Sunday intervening between Christmas and New Year's Day, fully a dozen automobile parties of men and women, well wrapped up for protection against the raw winds, were observed driving out from New York city over McComb's Dam Bridge and Jerome Avenue in the three hours between noon and 3 o'clock. It was an ideal day for sleigh-riding, the ground being covered with five inches of snow on the level, the sky clear and the temperature at just about the freezing point; and there were dozens of couples out in cutters to take advantage of it. But side by side with them were the automobiles, while other wheeled pleasure carriages were in a decided minority. From these surroundings the accompanying pictures were snatched by THE AUTOMOBILE'S staff photographer. All of the automobiles which he saw were of the gasoline motor variety, and most of them of tonneau pattern, but at the same hour another staff representative observed several steam surreys and an electric runabout on Coney Island Boulevard. All passed through the snow without difficulty, but the heavy cars sometimes slewed in the deeper snow when passing other vehicles.

RUNABOUTS USED IN COLLECTING HOLIDAY MAIL IN CLEVELAND.

RUNABOUTS PUT TO WINTER USES IN CLEVELAND.

Special Correspondence.

CLEVELAND, Jan. 3.—During the holiday season three Olds runabouts were fitted up with delivery boxes, as shown in the accompanying photograph, and offered with the services of operators, free of charge, to Postmaster Dewstoe. The offer was gratefully accepted, and the machines did excellent service. They were used exclusively in collecting packages, and covered the heaviest routes in the downtown section of the city. They simply walked away from the horse-drawn carts and on several occasions covered routes in two hours, which required six hours by the old method of collecting. There is a possibility that some of the local mail collectors may change from horse wagons to automobiles as a result of the demonstration, as they figure that if they can cover two or three times the ground with an automobile that they can with a horse, their pay is likely to be increased proportionately. The photograph shows the wagons as they were about to start on one of the collecting trips.

RUNABOUT DRAWING SNOW-PLOW IN RESIDENCE PART OF CLEVELAND.

Another and more unique use to which the runabout has been put this winter is shown in the other photograph. A sidewalk snowplow was tied behind the machine by a rope and used for freeing the walks. Although the snow was nearly two feet deep, this outfit did the work quicker and better than with a horse or team as motive power. The sidewalks in the aristocratic parts of town were cleaned in this way for several mornings.

Automobiles have been used here by their owners through all the snowy weather, with the snow often up to the hubs, and those who have tried winter driving say they enjoy it as much as a spin in a cutter behind a fast horse.

AUTOMOBILES IN CITY AND COUNTRY POSTAL SERVICE.

Special Correspondence.

INDIANAPOLIS, Jan. 3.—Some time ago a local automobile company requested the city postmaster to allow it to test a plan for the use of automobiles in collecting mail. Permission was granted and the demonstration was most satisfactory, even the automobile dealer himself being surprized by the record made. Leaving at the same time as the collector who makes the rounds with a horse and wagon, he completed the circuit and was back at the

starting point one hour and ten minutes sooner than the man with the horse ever was.

Postmaster McGinnis was pleased with the saving of time, which is an important consideration with Uncle Sam. He does not know that this saving will justify the general adoption of the automobile in the postal service, but he has the matter under consideration.

Superintendent Rathbone, of the rural mail department, expresses himself as being well pleased with the machines that are being used for country free delivery in Eastern Indiana. With the improvement of the roads, which is to come before the Legislature this winter, it is possible that the automobile will have a new field opened to it.

Traction on Steel Rails.

A preliminary test of the new steel tracks on Murray Street, New York, was made on December 17 by Gen. Roy Stone and Major F. B. Jones, U. S. A. A four-wheeled garbage dump cart weighing 3,700 lbs. was drawn by laborers, a spring balance being interposed between the cart and the towline. As the gauge of the wheels was nearly as wide as the tracks, some resistance between wheels and flanges was encountered.

The trials were made on the upgrade, the distance being 400 feet. The pull necessary to start the wagon was 200 pounds, after which it was kept moving on the rails by a force of 80 to 100 pounds. When the wagon was changed to the Belgian block pavement the limit of the scales, 500 pounds, was exceeded before a start was made. When once under way the tractive force varied from 120 to 200 pounds.

Construction Features at Paris Show.

Rigid Versus Flexible Frames—Removing Bending Stress from Rear Axle—Direct Drive on Large and Small Cars.

Staff Correspondence.

PARIS, Dec. 23.—While there is a good deal of similarity in the general features of the cars exhibited at the Show there is plenty of new and interesting detail in many of the vehicles, and among these may be mentioned the new carriages on the stand of the Société Decauville. This company has always tried to break away from the usual lines of design and construction, with the result that they have turned out some very original types of vehicles, beginning with the noisy skeleton voiturette of a few years ago, which has now happily disappeared from the streets. Experience has since shown the concern that if originality is a good thing up to a certain point there is a danger of carrying it too far in automobile construction, and they consequently build a type of carriage which embodies all the modern features with several novel and interesting devices of their own.

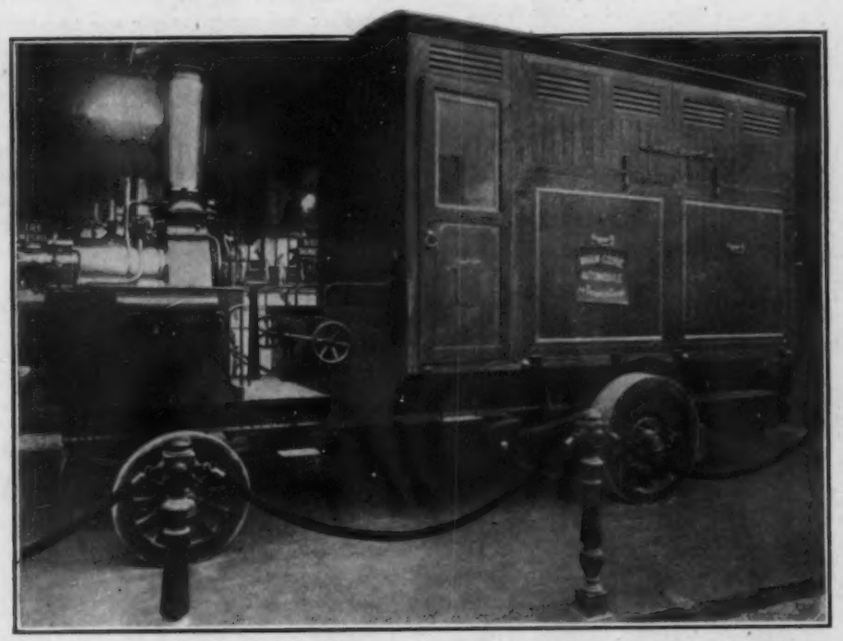
GIVING UP TUBULAR FRAMES.

The Decauville concern have given up their old tubular system of underframe and are now employing the usual steel section, which they say has the advantage of enabling the carriage body to be fitted in a much neater and more secure manner. Most of the firms are giving up the tubular construction for all but the lightest types of vehicles, and the only makers of mark remaining faithful to this system are Renault Frères, who claim that tubes offer quite as much rigidity and strength as sectional steel. The four-cylinder motor has the inlet and exhaust valves on each side, the former being operated mechanically. In this car the crank chamber and gear case are cast in one piece, and thus we see a principle of construction which differs widely from that being adopted by an increasing number of makers who think it preferable to employ non-rigid connections, not only between the motor and change speed gear and between the gear and the differential, but also in the method of attaching the machinery to the frame. In each case the object is to take the strains off the propelling machinery due to the jolting on the roads. Firms like Decauville urge that this can be done best by securing the greatest rigidity throughout, while others claim that as the frame itself is constantly subjected to twisting and torsional strains it is evident that if the motor and gear are to be relieved from these strains the mechanism must have a certain play in the connections. In defense of the Decauville system it may certainly be pleaded that the casting of the crank and gear cases in one piece ensures a perfect alignment of the bearings, and also greatly facilitates the work of fitting, but on the other hand it may still be questioned whether the partinium alloy usually employed has sufficient resistance to withstand the enormous strains that may be put upon it, unless of course the frame is absolutely rigid, a condition that is not only very difficult to obtain but is not perhaps altogether desirable.

DRIVING WHEEL HUBS FROM OUTSIDE.

Another feature of the Decauville car is the method of transmitting the power by universal jointed shaft onto the hubs of the wheels instead of on the rear axle. From the differential box are tubular extensions to the frame and within this tube runs the live axle formed of two pieces, the square ends fitting into the differential and the other ends forming claws which fit into the outside of the hubs to which they are secured by wormed thimbles. There is thus an entire absence of thrust on the tubular shaft, and the wheels themselves run on smooth bearings.

As in all the other leading makes the Mors cars have been entirely remodeled to suit the requirements of the public for a silent vehicle, and the firm naturally employ mechanically operated inlet valves and a governed carbureter which will allow of the motor being slowed down to 200 revolutions a minute. Its normal speed is about 900 revolutions, so that with the new design of valves and the use of a carbureter which gives a constant mixture the engine runs with a lower piston speed



THE TURGAN ET FOY STEAM BOX CAR FOR CARRYING RACE HORSES

To the race track and for the transportation of disabled animals.—Turgan et Foy manufacture steam trucks, drays and tractors for heavy service. Their position in France is similar to that of Thornycroft in England.

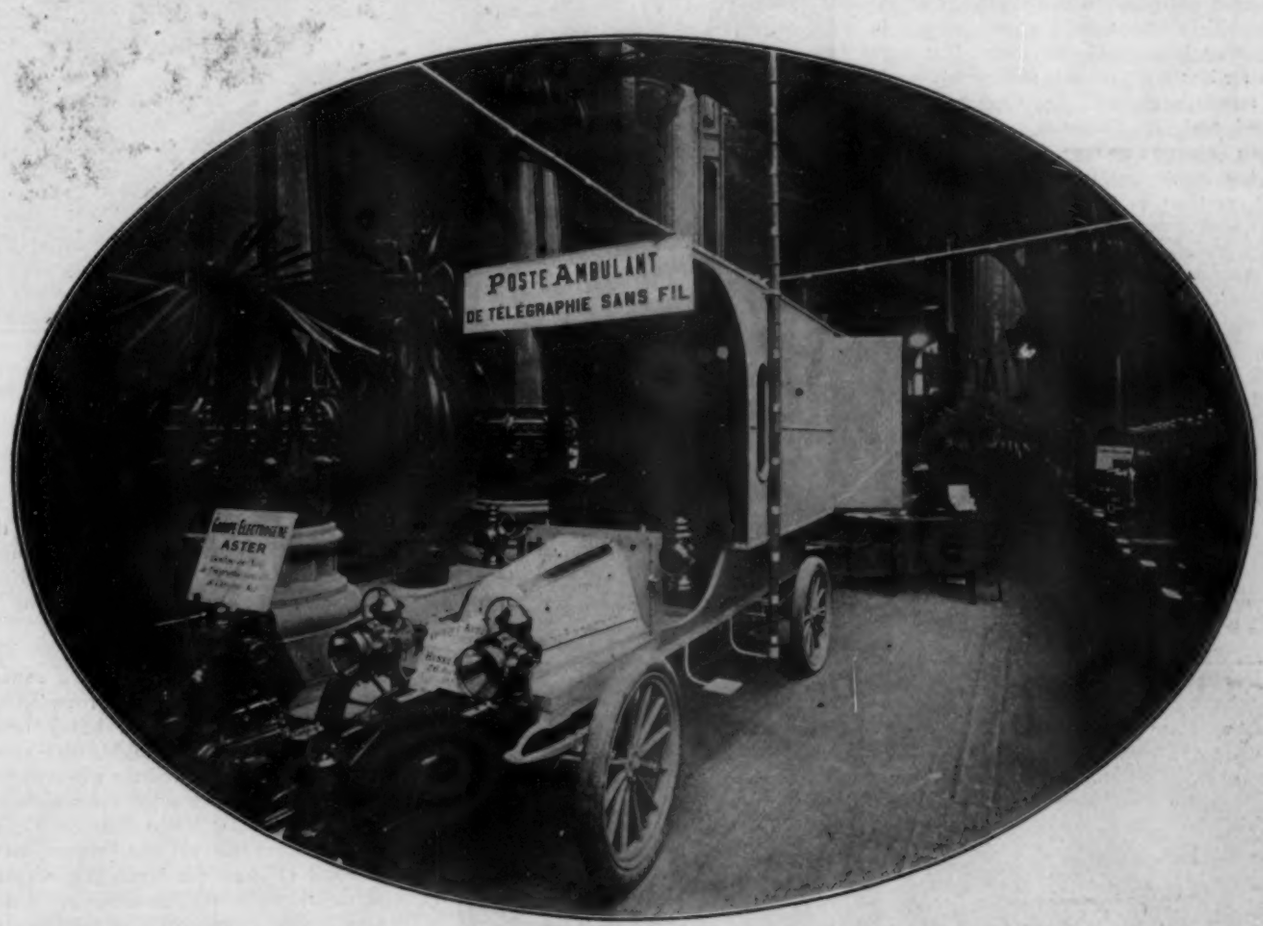
than formerly, this being indeed the general tendency of all the engines in the show. At one time it was the custom to run the motors with the highest possible piston speed, the little motors having 2,000 revolutions and the big engines 1,200 to 1,500, but makers are now giving up the practice of using high speed engines and run them normally at 950 and sometimes 750. This is the outcome not only of the mechanical valve and carbureter, but also of the better balance of the motors. Thus we see a move in the direction of an engine giving greater elasticity of power, of which more will be said later on. The Mors motor has an aluminum casing around the cylinders and the jacket extends all over the head and around the valves, an active circulation being effected by a gear driven pump, and the water is cooled in a honeycomb radiator tank from the front of the motor bonnet. The ignition is by magneto which is employed by an increasing number of firms, and this method is likely to come into very extensive use.

DIRECT DRIVE A NECESSARY FEATURE.

Apart from the engine and frame the Mors car has undergone little change, and the change speed gear with direct drive on the top speed is, of course, a feature which is coming to be looked upon as an almost necessary feature in automobile construction. On the light vehicles with shaft transmission the direct drive is a really valuable device, as is proved by the long experience of the Renault and other cars, but on the big carriages it is still a question whether the direct drive has any great advantage for touring vehicles where speed is not the chief consideration. Some of the big firms still hesitate to adopt it, but other makers of large automobiles are following the Mors lead and the system is certainly gaining in popularity. In the Mors gear both the shafts gear by pinions on each side of the differential, but the pinion on the primary shaft runs loose when the lower speed wheels are in mesh, and is keyed for the top speed.

The Mercedes cars shown are of the 1902 type and as their features are so well known the interest of these vehicles lies chiefly in the fact that they are being taken as the standard of automobile construction all over the Continent. The Cannstatt people were the first to show that a gasoline vehicle could be made to run almost as silently as a steam car, and there is no doubt that this has done a great deal toward advancing the interests of automobilism by bringing in a larger number of buyers who object to the noise of the older systems of carriages, at the same time that it has laid down entirely new principles for the designing of gasoline carriages. Harry Payne Whitney is one of the prominent Americans who have taken advantage of their visit to the Paris show to buy Mercedes cars, and several of these vehicles will be going over to the States during the next few weeks.

The newest type of Mercedes will not be seen until the meeting at Nice in March next. It is said to have many interesting features, though there will probably be no radical departures from the existing type, the improvements being mainly in the direction of saving weight and simplifying the mechanism.



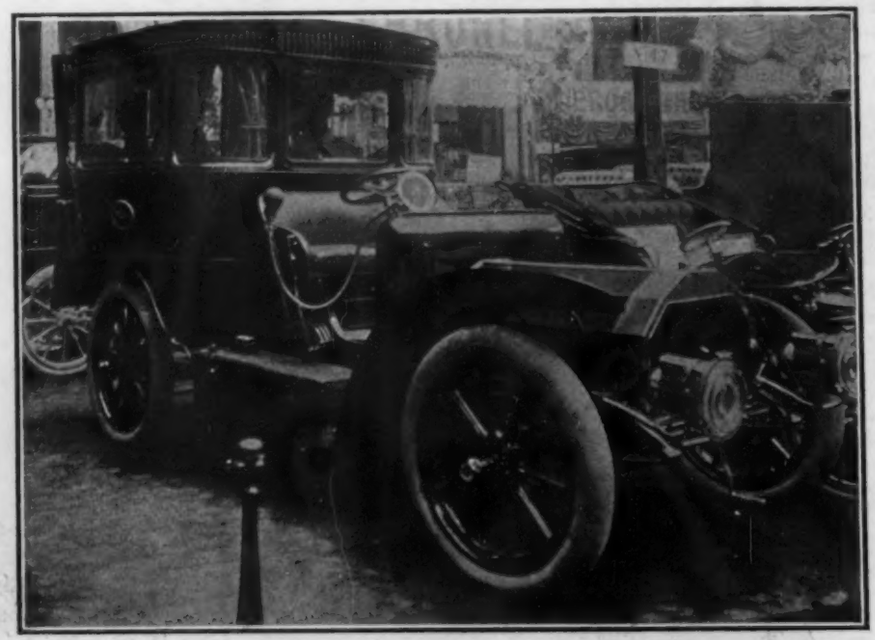
STATION FOR WIRELESS TELEGRAPHY ARRANGED IN AN AUTOMOBILE.

DYNAMO TAKES FLYWHEEL'S PLACE.

Another prominent purchaser at the show is Mr. Harmsworth, the newspaper millionaire of London, who is spending his money to good advantage for the English automobile industry, and last spring he bought one of the first Mercedes cars appearing at Nice and placed it at the disposal of English automobile engineers so that they could study the latest developments of the industry in Germany. Mr. Harmsworth has now bought one of the Mercedes cars with Lohner-Porsche electrical transmission. This is quite different from the Jenatzy system, as in this

case the dynamo is used for charging a secondary battery which is utilized to assist the motor when extra power is needed. In the Lohner-Porsche there is no secondary battery, but the dynamo takes the place of the flywheel and sends the current direct to motors on the four hubs. The system is very popular in Vienna where the vehicles are manufactured, but they do not seem to have made much headway elsewhere.

The popularity of the gasoline automobile has so entirely eclipsed the steam car in France that very little is seen of this type of vehicle, but nevertheless steam has found a big place in the affections of automobilists who take a great interest in anything done by M. Serpollet. If it were not for him it is probable that steam would be utterly neglected. The French revel in speed and M. Serpollet gives them as much sensation as they need, for no sooner has he started breaking records with one car than he designs another that will do still better. There have consequently been great crowds round his stand to see the new racing machine he has just completed with boat-shaped body which is to supersede the famous Easter Egg and the equally famous Whale. In this car the engine is of the 40-horse power type, but it is difficult to say what it would develop over a short course. There are many little improvements in the Serpollet vehicles which aim at lightening and simplifying the mechanism. In the old types the water and oil pumps are actuated by stepped cams so that the plungers of the pumps only have five or six variations of travel. These have now been replaced by a Stephenson link arrangement, which is lighter and takes up less space, and gives every possible variation of travel to the plungers. The capacity of the generator has also been increased at the same time that it occupies a smaller space. The weight of the frame and machinery all complete is 2,090 lbs. This frame is also employed on the new touring cars in which the water tank is placed in front forming a bonnet something like the gasoline cars, and by lowering the generator at the rear it is far less conspicuous than formerly. In designing this new type of frame M. Serpollet seems to have in view the construction of a heavier class of vehicles than formerly, and as he showed an omnibus with a 20-horse power engine it is probable that he will return once more to the question of public transport. He ought to have a bigger field here than in trying to compete with the perfected types of gasoline carriages.



GRAND TOURING CAR OF THE SOCIETE PARISIENNE.

Described as the most comfortable and complete automobile ever produced. Details are given in the Paris Staff Correspondence.

There is a considerable improvement all round in the carriage bodies, chiefly in the way of making them roomier and more comfortable, but by far the most luxurious vehicles are the omnibus and limousine on the stand of the Société Parisienne. The bodies are fitted on Mors frames by Lamplugh & Co. The omnibus has a square form with the corners boldly rounded off and glazed all round with heavy bevel glass. The interior is highly decorated with incrusted ceiling and the windows are framed in light green plush curtains, with clusters of electric lamps. At each corner is a swivel fauteuil, and between them are small cabinets for holding little articles and serving the purpose of desks. There is also an indicator for signaling to the driver. On the dashboard is a long narrow box glazed at the top and divided into a number of compartments in each of which is an electric lamp, so that by touching one or other of the buttons a bell rings to call the attention of the driver and at the same time one of the lamps is lighted, showing one of the signals on the glass so that he may know whether to stop, or go to the right or left, or turn about or go home.

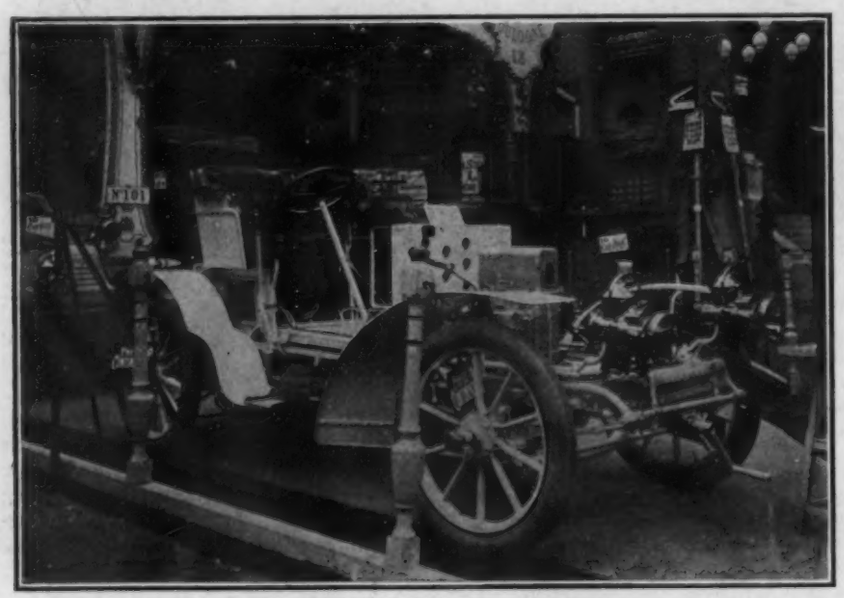


EXHIBIT OF GOBRON-BRILLIE IN THE GRAND PALAIS.

Opposed horizontal cylinders with combustion chamber in the center and two pistons driven by the same explosion in opposite directions forms one of the principal characteristics of this manufacture.

W. M. Letts, representative in England for the Locomobile, is now on a trip through the western United States. He will return in time to take in the show at Madison Square Garden and to renew acquaintances made during his visit to the show of two years ago.

Paris Show from English View.

The London Staff Correspondent Records His Observations of New Construction by French Builders.

PARIS, Dec. 20.—There is no denying the fact that the exhibition of automobiles, motor-cycles and cycles now arrayed beneath the sweeping roof of the Grand Palais in the Champs Elysees is the finest show of motor-propelled vehicles that the world has yet seen. Nevertheless, to the visitor who recalls the exhibition of last year it is something of a disappointment, for there are no actual novelties. Whatever is found in the shape of an advance has been signaled, heralded and described weeks and in some cases months before the exhibition opened its doors, so that the visitor who follows the course of the movement in the press is more or less prepared for all he sees and must find interest in the slightly varying details of the methods employed. But what is borne in most strongly upon the man who gives even cursory attention to the exhibits is the undeniable fact that the French automobile engineers have absolutely relinquished the proud position of leaders of the automobile engineering world, which they most assuredly occupied and have become nothing but imitators. Each and every one of the leading French firms have gone blind for Mercedes system, both as to the mechanical actuation of valves and the honeycomb cellular form of water cooler with fan-forced draught. The maker who has not worked these two features of construction into his vehicle is regarded by French automobilists as behind the times. *Sans doute* the Mercedes is a great car, but to achieve equal success I cannot believe that it is obligatory or necessary for men who have done so much as the French to blindly copy the Cannstatt people. Yet this is what the flower of the French trade has done, and is still doing, only, I believe, to find themselves farther behind next year, if the Mercedes people are to be presumed to set the fashion to the world. In the matter of the induced draught for cooling purposes the German firm have stepped away from their French imitators already. While the latter set a fan with six or seven vanes on a special spindle of its own and drive the same off the engine shaft by a belt drive, the Mercedes have already relinquished this. Wholly enclosing their engine by an under-metal casing (indeed, a kind of inverted bonnet), in addition to the super-imposed bonnet proper, they make their flywheel with vane arms and produce a forced through draft, not only through the honeycombed cooler alone, but right through what for want of a better term, we may call "the engine room."

Then, again, I am credibly informed that the Mercedes people have another thing up their sleeve, and will blossom out not too late with a transmission which will obviate the bevel drive and will have all rotating shafts parallel and in the same plane. Just how this is to be done I am unable to say, but I know it to be on the way, and if the "Mercedes" people have got as far as that, we may rest assured that the mechanical and constructional scheme of the means by which this is achieved is about right. I have heard much regret expressed by many English automobile engineers that the French makers should so sincerely flatter the German house. The vehicles of the great firm of "Mors," for instance, who, one would think, had done like Henry IV at Agincourt, "enow for glory," are to all outward and much inward appearance "Mercedes" cars. Yes, even to the irregular hexagon section bonnet, which resembles nothing so much as the weighty tombstones with which our grandfathers were wont to seal up their forebears in the God's Acres of their time.

NICKEL STEEL FRAMES.

In frames, too, the imitation is slavish, although there, I fancy the Mercedes people have gone very near to saying the last word. The Mercedes frame as we have it at present, although something entirely variant may be an issue from Cannstadt, is formed of nickel steel of [section, properly cambered as to the upper side and formed sectionally in the completest manner to take the strain at each point of the frame in the best possible way. The *bois armée* frame, that is, the wood frame with steel flitch plate running along the inside faces of the longitudinal members, is a thing of the past. But though the French makers have followed after the German house in the matter of form herein, they have not in material, for many of them in the place of nickel steel are using Bessemer, and it is not unlikely that with big, highly-powered cars the frame rivets may draw.

The Panhard Co.'s exhibit was naturally the first to attract a visitor's attention, or at least the first to which one made one's way upon entering the show. With the exception of the "Krebs" carbureter and the new three-cylinder engine, the great French firm are marking time. They, almost alone of the big French houses, have refrained from lying down upon the German trail, but, on the other hand, they make no step forward. The introduction of the three-cylinder engine does not strike me as remarkable. It has long been considered as the best form of petrol motor by one of our cleverest automobile engineers, Mr. Craig, and by him is built into the "Maudslay" car, the very first of which did so well in the late Reliability Trials of the Automobile Club. If questioned upon the subject we imagine the Panhard people would return that a 70 horse power engine was not intended for the general use of the public, but only as the propelling agent of a crack racing

LA BELLE JARDINIERE EXHIBIT OF AUTOMOBILE CLOTHING AND FURS.

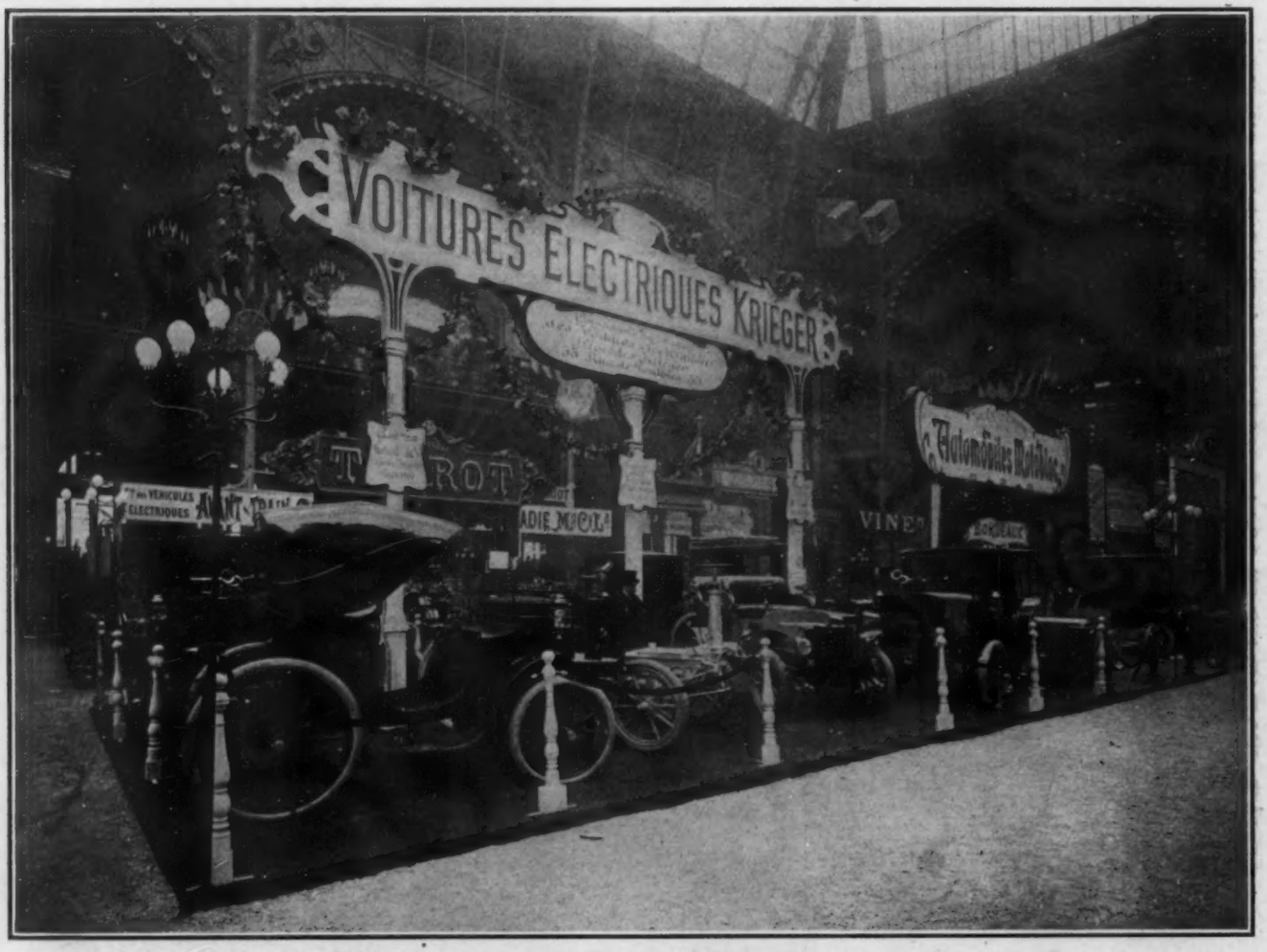
machine, but, nevertheless, I regard the design which necessitates the detachment of 22 nuts for the removal of the cylinder head as ill-considered. By each and every visitor to the exhibition from this side with whom I conversed the Panhard exhibition was admitted to be a disappointment.

DECAUVILLE DRIVING AXLES.

Perhaps the most satisfactory show was made by the Decauville Co., the chassis of a 20 horse power propeller shaft driven car exhibited by them offering many admirable points. The chief of these is the rear driving back axle, which, by special construction of the tubular sleeves forming the prolongations of the differential gear case on each side, is preserved from all road shock. This is done by producing the hollow sleeves beyond the springs and making use of the productions as a fixed axle upon which the road driving wheels rotate upon ball bearing. The live driving axle or shaft pass through these sleeves on each side, and, the hubs of the driving wheels being formed with outward overhanging flanges, driving connection is obtained between the live axle or shaft by means of a dove-tailed flange set on the squared end of the live axle and filling in between shoulders formed in the overhanging flange of the driving wheel. The dovetail flange is secured in its position on the live axle by lock nuts and washers. A dust and oil-proof cap screws onto the outside of the driving wheel flange and encloses everything. It will thus be seen that all road shock is delivered by the wheel onto its bearing on the fixed axle, which is strongly attached to the springs, and the riving strains which have at times proved disastrous to live axles when these have directly carried the road wheels on their outer ends, do not in the case of the Decauville cause any trouble of that sort. Similar practice is followed in relation to the propeller shaft which is carried in the interior of the radius rod in a similar manner, the radius rod being formed with globular universal joints at either end surrounding but apart from the universal joints of the propeller shaft. The Decauville Co., like many others in the show, now case in their engine and flywheel beneath the frame with light metal casing, and, to my mind, it is only remarkable that we have had to wait so many years before this has become fairly general in practice.

ALL GEARS IN ONE BOX.

The "Henriod" châssis exhibited by the maker of that name is remarkable for the manner in which the central change speed gear box is abolished. M. Henriod couples up his propeller shaft directly by the usual universal joint to the rear end of his clutch shaft and places his change speed of the usual *train balladeur* type in a forward extension of the differential gear case, which is carried on the lateral sleeve extensions of the differential gear box. The forward end of this gear case is supported by a short radius rod running back to the rear transverse member of the frame. The change speed gear and the propeller shaft are saved as much as possible from road shock and the effects of axle and frame distortion by the fact of



KRIEGER ELECTRIC VEHICLES—TO THE RIGHT "MOTOBLOC" MACHINES MADE IN BORDEAUX BY SCHAUDEL.

The Krieger electric carriages are looked upon in Paris as foremost electric construction equal in style and comfort to the productions of the Electric Vehicle Company of Hartford, Conn. This year Krieger has produced, besides the storage battery vehicles of well-known types, electric-driven cars in which the power is supplied from a gasoline motor driving a dynamo in turn driving electric motors on the front axle. The Motobloc manufacture is characterized by having the motor and the transmission gearing all incased in one box on "bloc," making an exceedingly compact mechanism, first introduced by Theo. Schaudel, a gun-maker of Bordeaux.

this radius rod being made with universal joints at both ends. This is a somewhat daring and novel departure, the qualities of which have yet to be proven in hard use. I do not see any objection to this system, providing the method of hanging the gear case from the hollow sleeves and by the aforesaid short radius rod to the frame, will really preserve all the gear shaft bearings strictly in line.

SIMPLIFIED MOTOR CASTING.

Throughout the show there is much evidence on the part of designers to abandon the cast iron cylinder and water jacket combined and adopt a tubular cast iron flanged cylinder, with thin copper water jacket around the piston travel and cast iron cylinder combustion heads and valve chambers bolted to the top flange of the cast iron cylinder tube, which in its turn is bolted by means of its lower flange to the crank chamber beneath. In some cases, and notwithstanding the adverse criticism of many practical men, some firms are employing steel tubes in lieu of cast iron tubes for cylinders.

The finish of some exhibition châssis, notably those staged by the Darracq and Decauville people, was of the highest possible kind. Indeed between £50 and £100 alone must have been expended on hand work on these châssis.

CHENARD & WALCKER'S GOVERNOR.

With very few exceptions, mechanically actuated induction valves were the order of the show, but the firm of Messrs. Chenard & Walcker adopt a method of governing their engine through such mechanically actuated valves, which is at all events new to automobile construction, and is not seen on any other car in the Palais. The cams for lifting the induction valve striking-rods are made as a sleeve, capable of sliding fore and aft on a fixed shaft. These cams are formed with a lifting surface varying from a point to the width necessary for holding the valve open for the full charging stroke of the piston. The lifting surface from zero to the maximum, however, always opens the valve to its full lift. The sleeve is attached by suitable means to the governor and the hollow cam shaft is so arranged in connection with the governor that so soon as the engine begins to run above its normal speed the cam sleeve is drawn along its fixed shaft proportionately so that the induction valves are opened for a lesser and lesser time as the speed of the engine augments. The governing of the engine by this system is as near perfection as may be, in addition to which the silence of the motor so controlled is remarkable. Another point, small but important, is the fact that however many cylinders the engine may have, only one contact is used on the commutator, and a spark jumps the points of all the sparking plugs at the same time. This makes for absolute regularity in timing, and, of course, only the cylinder fires on which the explosive charge is compressed.

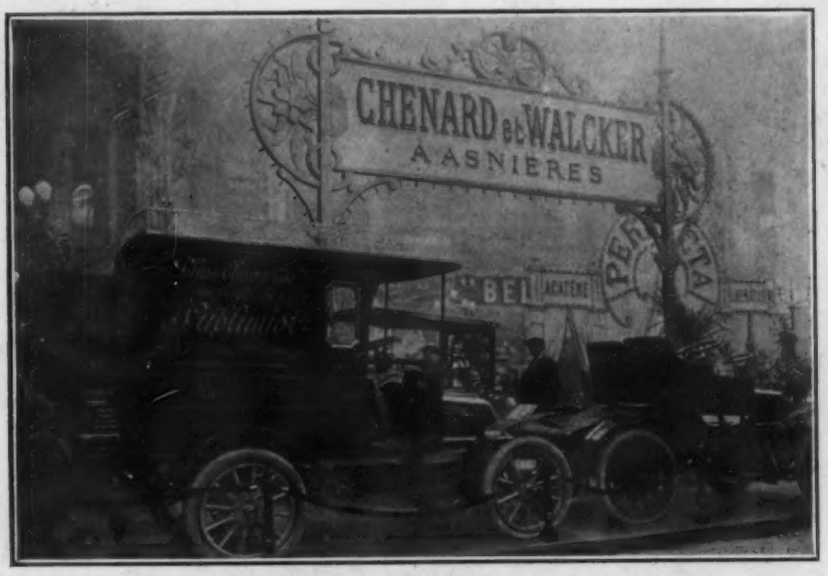
THE C. & W. CONE BRAKE.

Another point in this car is the use made of the male cone of the friction clutch to form a cone brake applied by a pedal. The rear portion of the cone is coned backward, and when drawn right

STAND AT THE GRAND PALAIS OF THE MORS ELECTRICAL AND AUTOMOBILE COMPANY

Which shares honors with Panhard et Levassor as manufacturers of racing cars. The Bordeaux-Paris race in 1900 and Paris-Berlin race in 1901 were won by Henry Fournier on cars of this manufacture, but when the weight limit of heavy cars was reduced to 1,000 kilograms (2,200 pounds) by the Automobile Club de France in 1902, both Mors and Panhard cars were distanced in the Paris-Vienna race by Renault cars, whose makers had longer experience with light construction. The omnibus to the left shows the adoption of the "honeycomb" radiator and rectangular hood for the high-powered vehicles, while the smaller car in the foreground resembles the models of 1902.

out of its driving cone on the flywheel engages with a coned ring carried on the frame and forming a particularly powerful brake. My only objection to this system is that the braking stress is obviously passed through whatever members of the speed changing gear happen to be engaged at the moment of the application of the brake. The Chenard-Walcker car exhibits yet another refinement which has for its object the elimination of road shock from the live driving axle. The road wheels are on the ends of a straight fixed tubular axle upon which the springs are carried, and have bolted to their spokes an internally toothed ring or drum. The live driving axle is carried above the fixed axle on the vertical plane, and has at its outer ends toothed pinions meshing with the internally toothed rings on the road wheels. The live axle is fitted with universal joints between the differential gear box and the insides of the axles' outer bearings. This method achieves the same purpose as is obtained by the Decauville system referred to in the early part of this communication. To my mind, it is even more effectually done, but is not quite so symmetrical in appearnce as the Decauville. The Chenard-Walcker cars must indubitably possess quality, as in the late consumption trials carried out under the auspices of the French Government they outdistanced all their competitors, covering no less than 51 miles on one gailon (English) of gasoline. This performance, they claim, was rendered possible not by any special form of carbureter but solely by good work and the efficiency they claim for their method of transmission.



A BUSINESS VEHICLE SHOWN AT THE CHENARD ET WALCKER STAND.

Chenard et Walcker have demonstrated greater fuel economy in their vehicles than obtained in any other French automobiles. For construction features see text.

The Motor Car Co., of East Orange, N. J., has been incorporated with $50,000 capital stock.

Timing Apparatus for Record Racing.

Adoption of Improved Devices Necessary if Short Distance Speed Contests Are to Be Continued.

BY W. P. STEPHENS.

The now famous error in the timing of the speed trials at Deauville in France last summer, followed by the recent dispute over the times in the hill-climbing contest at Eagle Rock, point emphatically to the fact that the methods of timing hitherto accepted as satisfactory in all sports have become inadequate and out-of-date for automobile races. A fifth of a second, the smallest sub-division of the best timing watch, has in the past met all the requirements of horse-racing, rowing, running, yacht sailing and even steam yachting; but to-day it fails in the required precision for gauging the difference of two racing cars. At a speed of 80 miles, which is about the limit at present, a car covers 7,040 feet in a minute, 117.33 feet in a second, and 23.5 feet in a fifth of a second. The whole subject of timing has recently been discussed in *La Locomotion*, *Le Chauffeur* and other foreign papers by such expert engineers as Messrs. Hospitalier, Espagneut and Chauveau. Some interesting conclusions have been reached and some valuable suggestions made.

DEFECTS OF THE PRESENT SYSTEM.

It is pointed out that, apart from the personal equation of error which must exist in even the most expert timers, and which can never be eliminated, there are other sources of error which tend to throw doubt upon the most carefully timed records for the flying kilometer and mile; and that if the breaking of records is to continue as one of the most fascinating of sports, an entire revision of the system is necessary.

In the course of an interesting article M. Hospitalier points out a structural defect of the ordinary split-seconds timing chronometer which unfits it for use in the timing of objects moving at speeds of upward of 75 miles. The governing wheel of the chronometer is divided into five parts, releasing the hand by abrupt jumps five times in each second, the principle being the same as in the electric clocks seen in some office buildings, in which the minute-hand is immovable for nearly a minute and then jumps suddenly to the next figure; and the Swiss watches without hands in which the hours and minutes are shown by changing figures visible through two openings in the center of the face. All of these instruments, while possibly extremely accurate, give no opportunity for minute measurements of time.

According to the reasoning of M. Hospitalier, there is possible an error of almost one-fifth of second—due to the undivided interval between two jumps of the second hand—at both the starting and the finishing of a run; and he claims that, of three cars covering the kilometer together in the same time, one may be timed correctly by the two errors balancing, one may be timed to gain almost two-fifths, and the third to lose the same amount. The effect of this would be a difference of almost four-fifths seconds between two cars. It may be noted that these figures are questioned by a writer in *The Motor-Car Journal*—who, however, recognizes the correctness of the principle—his figures giving a maximum possible difference of but two-fifths. This discussion and the undisputed inaccuracy of previous methods have induced several experts to outline the construction of new devices that will fully meet all requirements of motor car racing.

ELECTRICITY AS AN AID.

The essentials of such a device are in brief that it shall be strictly automatic and independent of all human manipulation; the mechanism shall be simple, durable, and free from a multiplicity of moving parts; it shall measure intervals of one-twentieth of a second; and it shall record each measurement in such a way as to avoid all possibility of a dispute over the readings of the instrument.

It is obvious that in the solution of such a problem as this electricity must be called on as being infinitely more rapid and re-

liable than any human organs of perception and action.

Starting at the line which marks the beginning of the mile or kilometer, we find under existing conditions a visible mark, the "tape," across the roadway, at the side being the timer with stop-watch in hand. As the car passes the line he watches the contact, the impression is transmitted from eye to hand, and the pressure of the thumb releases the flying hand of the watch. The same process is repeated by another timer at the finish, and in many cases two timers are stationed at each point, the four carefully comparing watches and readings. Anyone who has watched a car flying over the kilometer in about one-half minute will appreciate the difficulty of even the most expert timer catching the exact time when the front hub is over the tape.

The application of electricity to this part of the problem is a comparatively simple matter, and at least two methods have been proposed. One of these was tried at the races on Coney Island Boulevard in November, 1901, when Fournier cut the mile record to 51 4-5 seconds; a length of ordinary rubber hose was fitted with two separated strips of copper fastened inside, and this hose was stretched across the starting line, with a similar piece at the finish, the copper strips being connected to a line of telegraph wire. When the wheels of a car passed over the hose it was compressed and the two strips of copper were brought into contact, completing a circuit which was instantly broken as the car went on. The other details of the timing were primitive in the extreme, ordinary telegraphic instruments being used for starting and stopping the watches, and owing to lack of proper management outside vehicles were constantly crossing the tape at the sides, so that innumerable incorrect signals were transmitted, resulting in dire confusion. It does not appear that the method was defective in itself, though it has never been tried since.

THE ESPAGNENT "CHOPELET."

A somewhat different arrangement is proposed by M. Maurice Espagnent, engineer of the Heintz Battery Company of Paris, as a part of a very complete and ingenious timing apparatus. A strip of sheet copper about 1-16 inch thick and three to four inches wide is laid across the track. On a copper wire or cord are strung a number of balls of rubber and copper in alternation, the rubber balls being a little greater in diameter; and this string of balls called by the inventor a "chopelet," is laid on top of the copper strip. In their natural position the rubber balls will rest on the copper strip, while the copper balls will be held at a little distance above it; as a car passes the wheels will press the copper balls into contact with the plate, forming and quickly breaking the circuit.

The next point is the replacing of the timer's hand and the stop watch by something less liable to error and if possible making a permanent record. A step toward this is the Mors timing instrument imported last year by the Automobile Club of America and used in various trials through the past season. In this apparatus the ordinary stop-watch is retained, but only one is used; in that part of the apparatus stationed at the finish line. Some simple telegraphic apparatus, keys and sounders are arranged in duplicate on two boards, one of them being fitted with a special holder for a stop-watch. The passage of the car over the starting tape is noted by an observer who by pressing a key signals to the observer at the finish, who starts the watch, stopping it when the car crosses his tape. This apparatus is intended to be operated automatically by means of such contact devices as just described, an electrically released hammer striking the stem of the watch, but as used in this country human observers have been employed. It is possible, however, to both start and stop the watch automatically, leaving only the reading to the observer at the finish.

THE ESPAGNENT RECORDING TIMER.

A greatly superior method is described by M. Espagnent in connection with the contact device mentioned above. He suggests a narrow ribbon of paper such as is used in the ordinary commercial "ticker," moved at an absolutely constant speed by means of a very accurate system of clockwork which replaces the stop-watch. In connection with this ribbon is an adaptation of the ordinary telegraphic magnets operating a marking stylus or pen filled with fluid such as is used in registering barometers. When the car crosses the starting line and makes the first contact a current is sent through a coil of the electrical apparatus which generates a current in the reverse direction through the magnet which attracts the armature carrying the pen; this is pressed against the paper and held there until the making of a contact at the finish line reverses the direction of the current and releases the armature, when the pen rises from the paper. The exact speed of the paper—for instance, 50 millimeters or about 2 inches per second—being known, the length of the line drawn on the paper may be measured and the number of seconds quickly computed. It is also proposed that the paper be graduated to a scale of millimeters, fifty of which will represent one second of time, while ten will represent one-fifth of a second and one will represent one-fiftieth of a second.

This apparatus, which with the possible exception of the winding device for the paper, which must be extremely accurate, includes only the ordinary details of commercial telegraphy, gives a permanent and unimpeachable record.

But how the paper may be unrolled by clockwork without imparting to it exactly the same jerky movement which causes inaccuracy in readings from a stop watch, is not explained.

THE HOSPITALIER SYSTEM.

Mr. Hospitalier suggests a device which will obviate the necessity for accurate and uniform movement of the paper and will eliminate errors due to stretching or to atmospheric conditions which might affect the length. He proposes to use the old Morse recording telegraph with the ordinary recording apparatus, which will draw a line on the paper representing the time of passage of the car; in addition a second pen operated by some form of electric timer will simultaneously mark the seconds on the paper. In practice it will matter little whether the speed of the paper varies within considerable limits; the beginning of the line indicating the speed of the car will be found between two marks representing different seconds of time, and the distance these marks may easily be divided into tenths or twentieths and compared with the point of starting. The full seconds as marked on the paper are then counted until the speed line ends between anothr pair of second marks, which distance is readily divided and measured. In actual practice it will be an easier matter to construct a chronometer which will make marks on paper by electrical contact than one which will feed a strip of paper under pressure. It is suggested by M. Hospitalier that an electric pendulum marking seconds be employed, a simple and accurate device.

In view of the suggestions here outlined the problem of a thoroughly practical and satisfactory device for timing the fastest motor cars seems a simple one; and as soon as the necessity for it is as fully appreciated here as it is abroad, results may be looked for from American inventors. The electrical details involve nothing that is specially new or radically different from devices in common use, and the same may be said of the chronometric apparatus.

Rules for New Contests.

The National Association of Automobile Manufacturers has sent out a circular soliciting the opinions of its members in regard to the rules to be adopted for public tests of automobiles this year. It is proposed to include the following points among those to be considered by the judges as a basis for awards: Appearance, comfort, condition of car at end of test, cooling system, gasoline consumption, hill climbing, noiselessness, power and weight, reliability, safety (steering mechanism and brakes), simplicity in handling, speed. The British system of calculating values for each point by a curious combination of general judgment and arithmetic is submitted to the criticism or approval of the members.

Correspondence

Anonymous Communications.

An unsigned communication mailed in New York city and calling attention to the alleged "cornering" of the gasoline supply in Bombay by a druggist upon hearing that a shipment of gasoline runabouts had been made from New York to that Indian port, has been received for this department. We are very glad to receive letters from subscribers upon any subject of interest to the automobile fraternity, but it is proper that we should know from whom all letters come. The names of the writers will always be withheld from publication upon request.—Ed.

Positive Feed Carbureters.

Editor THE AUTOMOBILE:

Sir:—Will you kindly inform me where I can buy a positive feed carbureter and an air pump that I can attach to shaft of my engine to pump air into a whistle tank?

Wollaston, Mass. L. LEWIS.

[If by "positive feed carbureter" the inquirer means a carbureter that injects a certain and predetermined quantity of gasoline at every suction stroke of the piston, as we presume, we have no information of any such being in the market. If, on the other hand, he means a carbureter that is positive by reason of gravity feed, he can apply to the Thomas Motor Co., Buffalo, and H. Porkoney, Hovey and Pike streets, Indianapolis. In this sense, however, any float-feed carbureter is positive, depending only to a small extent upon the inspiration of the engine to draw the gasoline into the mixing chamber. The requirement of a pump to pump air into a whistle tank is unusual, but any manufacturer of steam vehicles who equips his machines with automatic pressure pumps for the gasoline tank should be able to fit one as a special job, provided there is room on the crank shaft for its attachment. He might inquire of the Stanley Brothers in Newton, the Binney & Burnham, 54 Devonshire St., Boston; and the Gleason-Peters Air Pump Co., Mercer and Houston streets, New York.—Editor.]

Assembling Parts for Profit.

Editor THE AUTOMOBILE:

Sir:—Do you think that a company could buy the parts for automobiles, both steam and gasoline, assemble them under some name of their own and make a paying business of it? "TRADESMAN."

—— ——, *N. H.*

[An automobile is an organism in which there must be a certain correspondence between the various organs. The power of the motor, the dimensions of the gears, the weight of the carriage body, the size of clutches and of bearings, the strength of everything, etc., are factors mutually depending upon each other. A unity of plan cannot be expected in parts supplied by many different makers, and without it the assembled automobile quickly comes to grief. So far the best automobiles have undoubtedly been made in factories where component parts and special organs were designed specially for a certain type of machine, and according to one man's calculation of the stresses to which they would be subjected. To obtain acceptable results by assembling parts promiscuously would require a most extraordinary engineering ability in the assembler. Unless pleasing appearance, speed, power and other qualities which are necessary for the sale of automobiles are deliberately sacrificed, we consider it at the present stage of the industry quite inadvisable to attempt mere assembling, except for experimental purposes. Another thing is that one style of frame and running gear, with motor, may be designed by some one manufacturer and the component parts placed at the disposal of machine shop owners for finishing and assembling, leaving the question of the vehicle body to be worked out according to the taste of purchasers. This seems to be one of the possibilities of the future, likely to be realized as soon as motors and transmission gear mechanism shall have been standardized more than they are at present.—Editor.]

To Prevent Boiling Away.

Editor THE AUTOMOBILE:

Sir:—The communication from R. Peterson, Texas, interests me, as I have had same trouble myself [with boiling away of water in gasoline car]. I took off pump and bent fans out carefully to full size of cylinder, then reamed out the opening at the top of the water jacket into the tank and threaded it to take one-half-inch pipe, as I intend to enlarge the water tank next season. However, capacious openings to admit of fast water circulation remedies the boiling away evil. Four horse power, as rated, is certainly inadequate, and the full efficiency of the engine must be carefully kept up; but with an Olds your correspondent hasn't begun to learn what trouble is. He would better keep that and get another larger, as you suggest, for one automobile is about the same as keeping one horse—one cannot expect to have it in working shape all the time.

I shall be pleased to see some manufacturer turn his attention to a machine for country use, for there is an immense field for a profitable business venture.

Madison, Iowa. H. W. GAMMELL.

Editor THE AUTOMOBILE:

Sir:—Referring to Mr. Peterson's letter and your answer on page 10 of the issue of December 20, I would say that I have a Packard 12 horse power, and have used it over all sorts of roads (once I could use nothing but the low-speed gear for six consecutive miles, it taking one hour and forty minutes to go the distance, no stops), and yet I don't think I have used a pailful of water all summer.

One reason for an engine's getting hot is too late sparking; another is excessive deposits of carbon on the inside of the cylinder. I would advise Mr. Peterson to fill his cylinder oil cup half full of kerosene, adjust it so that it drips quite rapidly and run the engine till it is all gone. This will remove some of the carbon.

Buffalo, N. Y. ROBERT H. TIFT.

Trucks for Freight and Lumber.

Editor THE AUTOMOBILE:

Sir:—Enclosed please find check for $2.00 for one year's subscription to THE AUTOMOBILE.

Please be so kind as to state the best manufacturer of automobile trucks for carting freight and lumber, to carry about from three to four tons.

ADOLPH MARTIN.

Passaic, N. J.

[As "the best" in anything is largely a matter of opinion and depends to a great extent upon the particular service that is required, this is a question that this paper cannot properly answer. Interested manufacturers should reply direct. If the trucking is to be done over short distances on good pavements in the city, an electric truck might prove the most satisfactory, while if the hauling is to be over long distances on country roads, a steam or gasoline wagon would be well adapted for the purpose. The Vehicle Equipment Co., Brooklyn, N. Y., makes many types of electric trucks; the Fisher Motor Vehicle Co., of Hoboken, N. J., makes combination gasoline and electric trucks of large size; the Morgan Motor Co., of Worcester, Mass., and the Thornycroft Steam Wagon Co., Paterson, N. J. make steam wagons, and the Daimler Mfg. Co., Steinway, Long Island, N. Y., and the Chicago Motor Vehicle Co., of Chicago, produce various types of gasoline commercial vehicles.—Editor.]

Air Pressure on Gasoline.

Editor THE AUTOMOBILE:

Sir—Can you enlighten me through the columns of THE AUTOMOBILE which would be the more satisfactory appliance for maintaining the pressure on the gasoline of a steam machine, by the use of the Reason automatic air pump with pressure from air storage direct on the gasoline in the tanks or by the use of the Phelps pumping system, which obviates tank pressure and lessens danger of leaky tanks. If any one has had experience with either appliance would be very glad to hear from him.

Greensburg, Pa. A SUBSCRIBER.

The automobile which the late Frank J. Matthews, of Jersey City, steered through the side rails of the railroad bridge at Elberon on August 26, when he and one of his guests, Mrs. Cobb, were killed, was sold recently to Alfred H. Morris, of Morris Park, N. J., for $6,750.

MOTOR BOATS

CRUISE OF THE "WIZARD" FINISHED IN FLORIDA.

STORY OF SECOND HALF OF TRIP.

Captain Adams Chronicles Interesting Incidents of Passage of His Motor Boat Through Rivers, Bays, and Sounds in Bad Weather from Southport, N. C., to Jacksonville.

Special Correspondence.

NEW HAVEN, CONN., Jan. 3.—The gasoline launch *Wizard*, Captain George E. Adams, which sailed from this port on November 4, arrived at Jacksonville, Fla., on December 21, after a very successful run which was full of adventure and in which Captain Adams found his temporary auxiliary rig of canvas to be of the greatest assistance in helping him on his 1,200-mile trip.

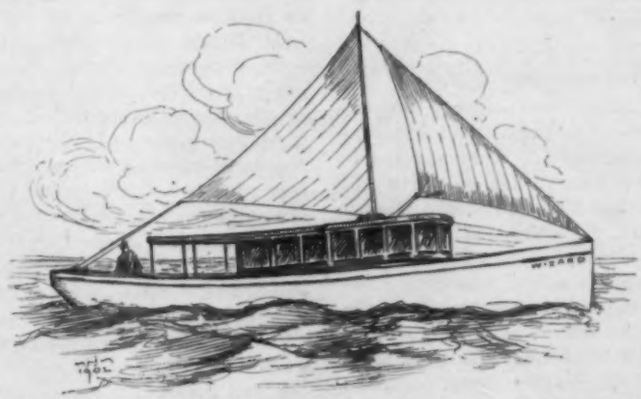
The story of the first half of Captain Adam's voyage, which is of interest to motor boat men as the Captain's log book gives important details of the run, has been given in these columns. It left the *Wizard* at Southport, N. C., near Cape Fear.

DANGER AVOIDED BY PRUDENCE.

Captain Adams writes, under later date:

"I find we were quite lucky in that storm we rode out in Bogue Inlet, when we dragged our anchors home twice. In the same storm at Beaufort a thirty-foot launch was blown ashore and crushed to pieces, while off Beaufort Entrance a brig went ashore and was wrecked, losing one man. We left Southport on December 9, with clear weather but cold, and made a run of 40 miles to Little River. The next day we hugged the shore with threatening weather, and with the boat logging about eight miles an hour. Arrived off the jetties at Winyah Bay at 2:30 P. M., and had a fair tide all the way up the bay. Stopped at the head of the bay for a day's shooting of squirrels and the like on the Donaldson place, which is a great game preserve. There are plenty of deer all over it. On December 12 we went down the bay intending to go to Charleston, but were induced to put back and try the inside passage because of the threatening weather. Met the motor boat *Agnes*, of New York, fifty-three feet over all, bound South. They wanted to follow us to Charleston, as they had no charts. The weather came off bad and it was well that we took the canal. Anchored that night in North Santee River at the mouth of Pleasant Creek. It was all right, although our boat was somewhat endangered by floating logs and trees from a freshet up the river, and continued to be until the tide turned.

"On the next day we were hindered by fog. Visited the light house on Romain River and the light keeper took us up to the top of the tower, 152 feet, and showed us the way to reach the channel leading to sea. There was a fine view of the country from the tower, but it was worth it to walk to the top and down. On Sunday morning we made a start from Bull's Island, across twenty miles of open water. The weather was bad, but arriving at Bull's Island would make it possible to make the rest of the run to Charleston by inside routes. The *Agnes* got aground going out and could not get off, so we had to leave her and proceed. The wind was on the quarter and we set all our canvas. It began to blow very hard and we made the twenty miles in an hour and a half, so you can imagine that there was some weight to the wind and that we made our canvas do us some good. I did not think the mast would stand it, but if I took the sails down the water was so crooked that I did not think the boat would stand it but would ship seas, and so we let her go. When we reached the mouth of Bull's Harbor the tide was running out, and as the water was shoal there was a tremendous sea breaking there. They were ugly chop seas, too, and we had to do some nice navigating to get through them safely. When we got under the land we took in the jib and shut off one engine and jogged along up to Bull's Narrows, where we had to wait for the tide. On the rising tide we got into Morgan's Harbor for the night, about five miles from Charleston Harbor.



MOTOR BOAT "WIZARD," SHOWING AUXILIARY SAIL ARRANGEMENT.

HIGH TIDES IN THE MARSHES.

On the following day, Monday, the wind still blew a gale, driving the tide up over the marshes so high that we could hardly find the channel of the little creeks through which we were to go. We arrived at Charleston at 9:30 in the forenoon. Took in 106 gallons of gasoline at fourteen cents a gallon, got our mails and supplies, and then pressed on South.

"We were under way early on Tuesday, for running through the inland creeks we did not have to wait for weather. It was only the tide that we had to take account of. Up one river it might be with us and down another just as strong against us. But it about evens up in the long run. There were lots of sail boats working up and down inside. They always go with the tide. When it is against them they anchor. There were also flat boats with no sails, being worked with big sweeps, which travel in the same way. This seems pretty slow, but it is a slow country down here. That night we tied up to a pine grove in Mosquito Creek.

THROUGH CREEKS AND SOUNDS.

"On the following day there was a continuance of the same navigation through winding creeks and rivers, until we crossed St. Helena's Sound. Then there were some more creeks until we came to Beaufort, S. C. We had to buck both wind and tide for about eight miles up and across Port Royal Sound to Skull Creek. This is as crooked a sheet of water as you ever saw, full of oyster rocks and marshy islands. We tied up for the night at Marsh Island in Callibogue Sound, where I went ashore and found millions of superb oysters. Thursday morning, bright and early, we got under way to cross the mouth of the Savannah River. Got across all right, in a gale of wind. The main channel of the river is built up on either side with sunken jetties so that we could not cross the river directly, but had to go down and around the mouth of it, through Tybee Roads. A couple of ships lay five miles off shore and were rolling in good shape. After this we had some crooked sailing until we reached Ossawaha Sound.

"The wind had dropped off now, and we slid along nicely up through the Florida Passage to St. Catherine's Sound, where we ran upon a shoal. We got off with but little trouble, however. We passed through flocks of thousands of duck and snipe.

"On Saturday the weather was fine and warm and we made excellent time. Passed Fernandina and got through the worst part of Sister's Creek, and on the following day with the weather just like summer we plowed the quiet waters of the St. John's River and reached Jacksonville just before noon. There we found people in summer clothing, and an umbrella very comfortable to walk under."

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SATURDAY, JANUARY 10, 1903.

MEANING OF THE MERCEDES CULT.

Naturally, all who are interested in automobiles have read the first reports from the Paris Show, and are now looking forward to the industrial display which will be staged in the Madison Square Garden in New York. A certain anxiety is no doubt felt by manufacturers in regard to the comparisons which will be drawn between the two exhibitions, and it is safe to say that our public, as a rule, will be disappointed if our industry does not show such decided progress in design, construction and variety as will compensate for the greater splendor of the French exhibition. Paris has a well-recognized talent for organizing effective demonstrations, and the French press ably seconds all efforts for lending luster to the attainments of the French industry. But through all the reports of the Paris Show there is nevertheless an undertone of dissatisfaction, because the most conspicuous features showing progress in construction are borrowed from non-French sources. In the eyes of all who look upon automobilism as a fashionable sport, and little else, there is a serious loss of prestige in the acknowledgment which has been wrested from the French industry to the effect that not they, but Mr. Maybach, of Cannstatt, across the Rhine, has led the way to a new epoch in automobile construction and has compelled the world to follow.

Others, however, will readily discover that the apparently slavish imitation means a turn in the affairs of automobilism more radical and more urgent than it appears on the surface.

French manufacturers have offset their admission of tardiness by a gigantic demonstration of their productive facilities, plainly indicating that though they had been caught napping as constructors by cultivating racing too long and too exclusively, they had not wasted their time. They had gained in commerce what temporarily they lost in glory and in scientific advancement. They had gathered momentum to carry them through to first place again.

It is not impossible that the Madison Square Garden exhibition will show that we, too, have followed the blind lead of fashion and sport a trifle too far, but that, on the other hand, we have so expanded our manufacturing facilities that it will be easy to make up for the lost time and appropriate to ourselves the engineering progress inaugurated by others.

If this should be the verdict to be passed on the coming Show, there would be nothing surprising therein, as we are far removed from the quick currents and cross currents of scientific ideas in Europe, and are not strongly influenced by them until they have grown large and well defined; but at all events the verdict—if, indeed, it must be rendered—will apply to gasoline vehicles only. In the steam and electric classes our methods have been quite as utilitarian, if not so self-reliant, as those applied by the Mercedes people to gasoline vehicles, and if there is any lesson for us in the sudden French flop from sport to utility, from Mors to Mercedes, it will here relate to the value of bold departures in construction in general, rather than to exact details; for there is no one to show us the way to improved steam and electric cars, except our own manufacturers.

To look upon the new Mercedes cult as a new vagary of fashion would be a blunder, and it certainly repays for the effort of close thought to examine carefully what this cult does mean. At the outset it seems obvious that those French manufacturers who enjoyed unstinted celebrity would not have abdicated and renounced the forms, designs and construction details of their own famous machines unless confronted with something whose vital strength in the automobile market was superior to theirs. They were still masters among speed merchants. The Mercedes car was not superior in the race. If speed had been as decisive as two years ago, they could have continued in their way.

Without now going into these details in design which make the Mercedes car what it is, it will be clear to all who have followed previous references to the work of Mr. Maybach, that he threw to the winds that time-honored fallacy according to which progress in construction must be based on racing experience. He did not take a car which was designed by guess and built by rule of thumb, out on the road to find its weak spots by speeding it to its highest capacity, and then proceed to mend its weaknesses by patchwork. Precedent was little to him. His basic work was in the construction room, not in the shop. His most important tool was his trained thought, and from it he evolved the frame, the valve, the radiator, the system of carburation and fuel feed, which are identified with his construction. Experience was supplementary, not fundamental, because the work was essentially new.

And in the conception of his task he was not led astray by racing considerations, but gave equal care to all the functions of a car which make it a conveyance adapted for average humanity. Speed was included as a requirement, but not supreme. The result was the first fast car which could go slowly with comfort and little noise. The engineer had attacked the automobile problem more broadly and independently than anybody before him. He planned a car to endure for its work; not a car to be "readily repaired" when it broke down. A car to be used as a conveyance; not a speed machine which might by courtesy be termed a carriage

The means which he devised for thus enlarging the general utility of automobiles have been copied, because there are ten persons who wish to own a mechanical vehicle for every one that has need of a toned-down racing machine. And in this sense the Mercedes cult indicates the beginning of the end of the speed era, to be followed by a more independent and logical application of scientific thought to the various construction problems of automobilism than has heretofore been the rule. The old school which bred automobiles of all kinds from racing model stock is dead.

At the Madison Square Garden Show several machines of the new school will be seen, it is promised, and their earmark will not be imitation of the most striking features of the Mercedes cars, but the employment of independent construction for accomplishing desired purposes.

THE MOTOR SLEIGH.

Probably not a few inventively inclined mechanics are at this time of the year giving some of their leisure hours to the consideration of motor sleigh construction, under the supposition that the popular demand for such vehicles should hold the same proportion to the demand for wheeled automobiles as exists between the number of ordinary sleighs and ordinary wheeled vehicles. If this supposition held good, quite an industry in motor sleighs could be built up, provided suitable construction were devised. In a thoughtless moment an authority on automobile matters has advanced flattering predictions for the motor sleigh builder and even went so far as to contend that the motor sleigh would have one decided advantage over automobiles, because "skidding, of course, would be out of the question."

In the face of such confident views it may be well to call attention to a few dif-

ficulties, commercial as well as mechanical. Sleighs are comparatively inexpensive constructions, which may be put aside between seasons without serious loss of interest on the investment. The horses or other animals that draw them can be used for other work; in fact, are ordinarily used for other work except in arctic countries. As soon as a motor attachment is made, these favorable economical conditions are totally changed. The original investment is greatly increased. Between seasons the motor equipment, unless detachable and adapted for other purposes, would be liable to great deterioration from non-use and lack of attention.

Mechanically the motor sleigh presents an independent problem of some complication. Propulsion through loose snow would be quite a different thing from propulsion over ice or packed snow. With rear-driving, skidding, far from being eliminated, would be most disagreeably emphasized. At every turn it would, indeed, be necessary to slow down to walking speed. Steering would be most precarious.

When considering the whole matter at all seriously it seems a foregone conclusion that motor sleighs must be front-driven and that the steering action must take place through the driving mechanism. The latter, too, must be divorced from the sleigh proper, so as to get in driving contact with the more or less uneven ground by an independent up-and-down motion; it must be detachable and available for other work. These considerations combined point to the motor-horse to take the place of the horse-motor, and who will say that there may not eventually be employment for a motor-horse in some form, also in connection with wheeled vehicles?

License Law in San Jose.

Special Correspondence.

SAN FRANCISCO, Dec. 20.—The motorists of California, like their brethren in other parts of the country, frequently find themselves the targets of ill-considered and unfair legislation. County boards conceive a prejudice against the motor car and proceed to embody their prejudice in harsh legislation. An ordinance recently introduced before the Board of Supervisors of San Jose seems, however, to rest on sound sense. The ordinance is for the establishment of a board of examiners for engineers of traction engines and locomotives of all kinds and to compel all men who are employed to operate them to obtain a certificate from the examiners. It was ordered that automobilists should be included in the requirements of the ordinance.

The annual meeting of the American Motor League will be held in New York on Thursday, January 22, 1903, during the Madison Square Garden show. Due notice of the exact time and place will be given.

GORDON BENNETT TESTS TO BE DECIDED APRIL 11.

A. C. A. RACING COMMITTEE MEETS

Alexander Winton Nominated to Represent the Club—C. W. Matheson Posts $600 Forfeit—Clarence E. Dinsmore on International Committee—Entries Close February 1.

At a full meeting of the racing committee of the Automobile Club of America last Monday, also attended by President Shattuck, it was decided to close entries for nominations to defend the American colors in the Gordon-Bennett race on February 1. It was confirmed at the meeting that the committee had already decided to nominate Alexander Winton as one of the club's representatives, this having been done on the strength of Winton's record as a builder and racing man without test of his new car in competition with other candidates.

Five entries in all have been received, the other four coming from H. S. Harkness, of Brooklyn; Percy Owen, of New York; L. P. Mooers, of Cleveland, and C. W. Matheson, of Grand Rapids, Mich.

The latter had just sent the required check for $600 in earnest of his intentions.

Among prospective candidates for the two undecided nominations, Albert C. Bostwick, of New York, and Winsor T. or Rollin H. White, of Cleveland, were mentioned.

A date for the competitive tests was set for April 11 and the candidates were instructed to have their machines in New York on that day for inspection and trial before the committee.

Some difficulty has been experienced by the club in obtaining full information of the revised rules for the Gordon-Bennett cup race, but it is understood that it may be held as early as May 15, and the dates selected for closing of entries, February 1, and for final choice of candidates, on or after April 11, are deferred as much as possible.

Clarence E. Dinsmore, of New York, was appointed the representative of the American club to serve on the international committee in charge of the details of the European arrangements for the race.

SYRACUSE CLUB HOLDS ELECTION AND BANQUET.

Special Correspondence.

SYRACUSE, Jan. 6.—The Automobile Club of Syracuse held its first annual banquet and election last night, about fifty being present. Several prominent invited guests were there, including Mayor Jay B. Kline, Congressman Michael E. Driscoll, State Fair Commissioner De Forest Settle, Prof. John E. Sweet, Commissioner of Public Safety Charles Listman, John Maxwell of Oneida, William Birdsall of Utica; and a committee consisting of Robert Gilman, T. J. Sweeney, F. B. Parker and T. F. Walsh, from the Board of Supervisors of Onondaga county.

The following officers were elected: President, T. D. Wilkin (re-elected); first vice-president, Hurlburt W. Smith; second vice-president, Willet L. Brown; secretary and treasurer, Frederick H. Elliott (re-elected).

The tables were decorated in the colors of the club and the menu cards were handsome souvenirs of the occasion. The first speaker was Mayor Kline, who said that the club could get anything within reason from the city authorities and spoke of the fact that there has never been a serious automobile accident in Syracuse.

Supervisor Robert Gilman, for the Board of Supervisors, pledged the assistance of the board to secure good roads.

C. Arthur Benjamin introduced as "Benjamin Franklin," made an appeal for an automobile day at the New York State Fair, and told some interesting experiences of his travels in various States with the automobile.

De Forest Settle, a State Fair Commissioner, assured the club that he favored an automobile day at the Fair and would use his influence with the commission.

AUTOMOBILE CLUB OF NEW ORLEANS IS ORGANIZED.

The first automobile club south of the Ohio River and east of the Mississippi was formed in the rooms of the Progressive Union in New Orleans on the night of December 29, with a score of progressive citizens as the charter members. It will be known as the Automobile Club of New Orleans, and will probably become affiliated with the Automobile Club of America in the near future, according to the *Daily Picayune*.

In response to invitations sent out, a number of enthusiastic automobilists and leading citizens gathered at the rooms and were called to order by Charles U. Kennedy, who was made temporary chairman. Sam Stone, Jr., was named for temporary secretary.

The secretary read the preamble of the constitution of the national organization which sets forth the objects of automobile clubs throughout the country. A brief discussion followed and then came the election of permanent officers, which resulted as follows: Albert Mackie, president; Theodore Grunewald, vice-president; Sam Stone, Jr., secretary; E. H. McFall, treasurer.

The following charter members signed:

Albert Mackie, Theodore Grunewald, Frank Sancho, A. R. Burt, A. J. Nelson, M. S. Hart, E. H. McFall, Ginder Abbott, Palmer Abbott, Charles U. Kennedy, John Smyth, J. L. Trann, Sam Stone, Jr., Guy Stone, Dr. Roger de Montluzin, W. C. Dotterer, Hewes T. Gurley and Emile Del Bondio.

NEW VEHICLES

The Cadillac Convertible Car.

This is a "convertible" car designed for general all-around use. A tonneau body portion is made separately to be attached or detached, making the machine either a two- or four-passenger vehicle. It is driven by a single-cylinder motor developing five horse power made by the Leland & Faulconer Mfg. Co. The bearings of the motor are of unsually large size and those on the crank-shaft can be removed without taking the shaft from the engine. The cylinder is detachable from the frame and all parts of the motor are interchangeable. There are no rubber, asbestos or other gaskets. The gasoline feed is positively and permanently adjusted for all weathers and temperatures before the car leaves the factory and automatically supplies a proper mixture for any speed from five to thirty miles an hour without change of gears. The ignition plug is of special design so placed as to be readily accessible and to avoid deposits of carbon.

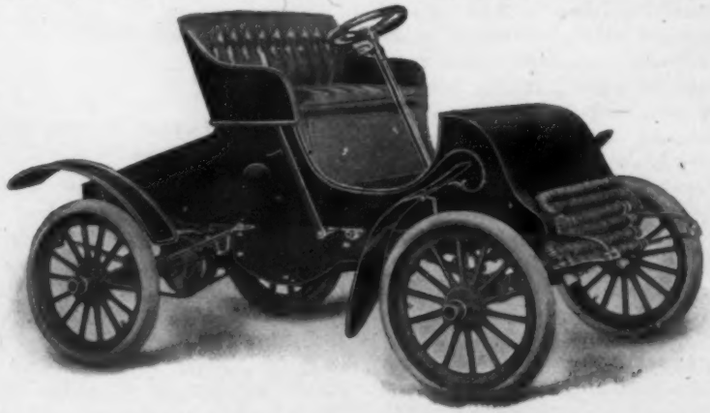
CADILLAC CONVERTIBLE CAR WITH TONNEAU SEATS ATTACHED.

A safety device has been provided to make it impossible to thoughtlessly attempt to start the engine on the early spark, thereby preventing the operator from getting a severe blow from the starting crank. The throttle lever that regulates the speed of the motor is located on the steering shaft within easy reach of the fingers of the steering hand. The muffler is provided with a cut-out. The radiator is of 5-8-inch seamless tubing, with copper disks spaced at 3-8-inch intervals. The tubing is in the form of an endless coil of twelve tubes and has no side plates so that the liability of leakage is avoided.

Transmission gears are of the planetary type, of steel engaging with bronze, acting almost noiselessly. They run in oil. One oil hole lubricates all bearings, and the total number of places for oiling the motor and transmission is unsually small. The driving axle is fitted with a Brown-Lipe differential gear, especially made with large braking surfaces keyed directly to each wheel shaft, which act like brake drums on the wheels and avoid insufficient brake area and excessive strains on the compensating gears, at the same time being unobtrusive to the eye.

The car has wheel steering, with an adjustment to prevent excessive and dangerous back-lash. American ball bearings were designed especially for the front and rear wheels. Wheels are of the standard compression wood type, fitted with three-inch tires. Drive is by ½ in. Diamond chain.

The frame of the car is of a new construction of steel angles braced throughout. The body is so attached that by the removal of six bolts it can be taken off entirely without disturbing a lever or wire.



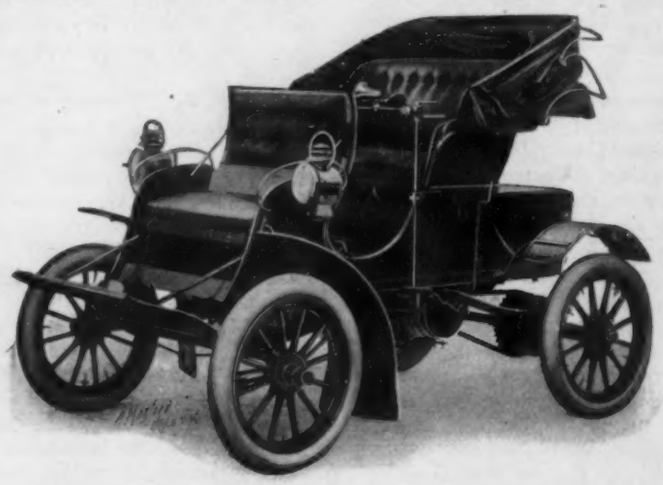
CADILLAC AS RUNABOUT FOR GENERAL UTILITY.

The upholstering is in curled hair and buffed leather, with coil springs in the seat and back cushions. All trimming and painting is done in the factory of the makers, the Cadillac Automobile Co., at 1,343 Cass Avenue, Detroit, Mich.

The Knox Waterless Car

The Knox Automobile Co., of Springfield, Mass., is now delivering to its agents samples of the 1903 waterless Knox car shown herewith. In general design it is similar to the 1902 model, but many improvements suggested by a season's service in all parts of the country have been made.

The most original and prominent feature is the air-cooling system. The number of cooling pins in the cylinder and the size and speed of the fan have been increased. The engine stroke has been lengthened one inch, making the Knox the largest and most powerful successful air-cooled single-cylinder engine made.

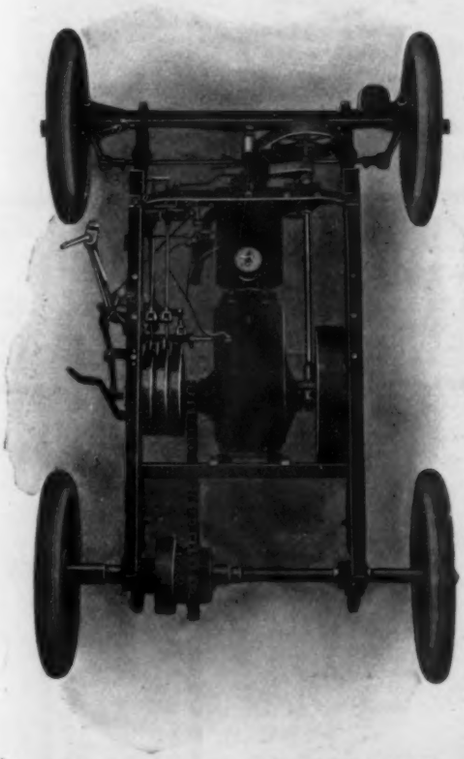


KNOX WATERLESS CARRIAGE WITH FRONT SEAT OPEN.

The folding front seat of the body has

been made wider, deeper and more comfortable so that it will easily seat two grown people. Brass arm rails have been added to the sides. The finish and trimming of the body has been improved and an option of two colors of paint will be given—dark red, with black trimmings and gold stripe, or dark Brewster green, with black trimmings and gold stripe.

The wheel-base has been lengthened to six feet. Wood wheels and 30x3 1-2 inch double-tube tires are now used. Extra large improved roller bearings have replaced the ball bearings on the running gear, and all the plain bearings on the engine and transmission have been made larger and bushed with anti-friction metal.



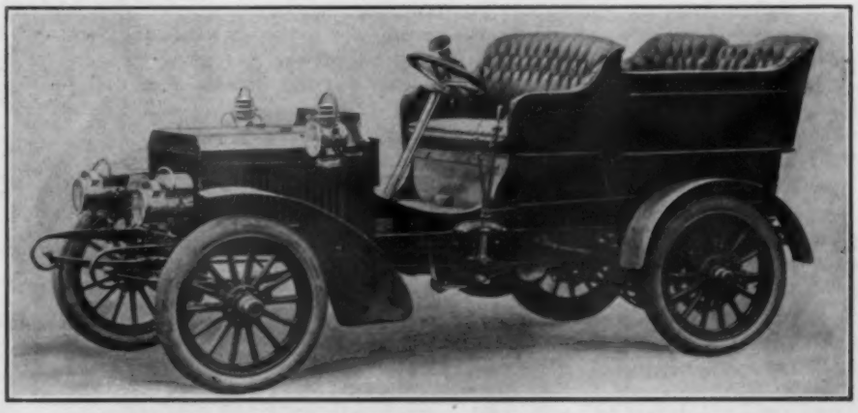
CHASSIS OF KNOX CAR FROM ABOVE.

All bright metal parts, including the lamps, are finished in polished brass. The emergency hand brake has been increased in size to make it more effective.

The oiling system has been simplified and made more convenient. A chain, with a guaranteed breaking strength of 10,000 pounds, is now used, and it may be easily adjusted by turning a nut on the rear end of the springs. A triple expansion muffler is used, giving a quiet exhaust without back pressure. The high-speed clutch has been improved and is now located inside the transmission casing, protected from all dust and mud. It may be quickly and easily adjusted from the side of the car and gives any degree of friction with slight pressure on the clutch lever.

The starting of the engine has been made easier and more positive by an improvement in the priming device. Both the front and rear axles and all other parts of the car subject to strains have been made stronger and more durable. The weight is now 1,600 pounds, complete.

The Knox Company has just added another large building to its plant and after February 1 expects to turn out twenty-five complete cars a week.



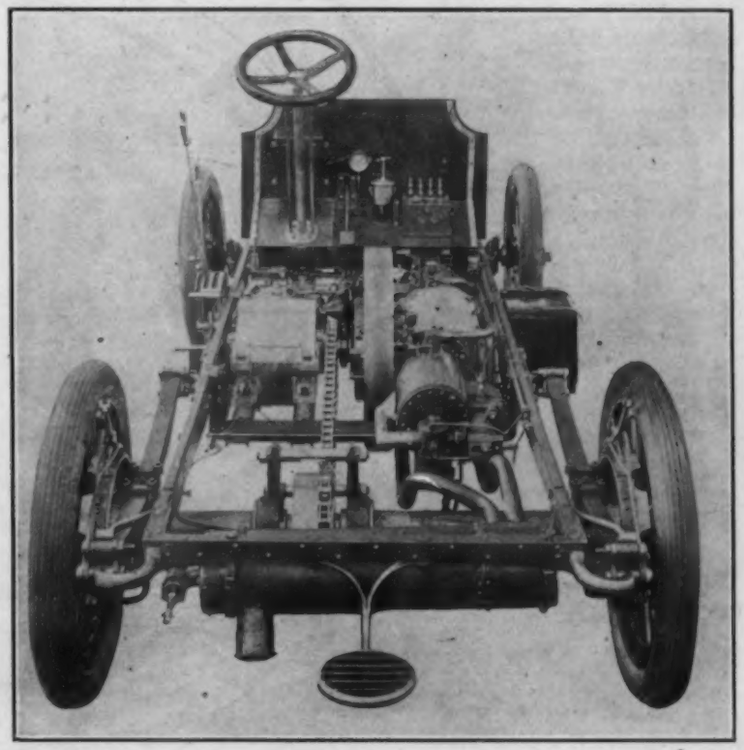
F. B. STEARNS 24-HORSE-POWER GASOLINE TOURING CAR.

Stearns 24-Horse-Power Tonneau.

This latest model from the plant of the F. B. Stearns Co., in Cleveland, is a large and powerful machine in which no pains have been spared to make it comfortable, luxurious and attractive. It has a wheel-base of eight feet and a seating capacity of six passengers, the tonneau comfortably seating four without a door seat. The front seat is single or divided as desired by the purchaser. The car is fitted with 34-inch wheels.

Power is furnished by a 24-horse power, two-cylinder horizontal motor, and the speed is rated at forty miles. The gasoline and water tanks have capacity for a run of 200 miles. The spark coils, oilers and circulation indicators are arranged on the dash, where they are in plain sight and easily accessible. The battery is carried on the side of the frame.

Drive is direct to the live rear axle. There are three speeds forward and a reverse. There is one set of brakes on the differential and another on drums on the rear wheels. The springs are of special construction.



REAR END VIEW OF CHASSIS OF STEARNS TOURING CAR.

The arrangement of the various parts of the machinery is shown in the photograph of the chassis herewith reproduced.

Exhibitors at New York Show.

Locations of Various Displays in Madison Square Garden—Late American and Foreign Additions—Interest Keen.

One hundred and forty exhibitors have been allotted space in Madison Square Garden for the third annual automobile show, to be held from January 17 to 24, inclusive. So great has been the demand for space that every available part of the great building has been utilized. In addition to the main hall and gallery, the restaurant, and even the basement, have been laid out for exhibition spaces. Nearly eighty of the exhibitors will display complete vehicles. These will be found in the main hall, in the restaurant and in the basement, while the parts and equipment specialties will be found on the balcony and interspersed with the complete vehicles throughout the building. The accompanying diagrams show the locations of the various exhibits as allotted up to January 1.

Since the publication of the list of exhibitors there have been a number of changes, the following being new exhibitors: Fisk Rubber Co., Chicopee Falls, Mass.; Brown-Lipe Gear Co., Syracuse, N. Y.; Midgeley Mfg. Co., Columbus, Ohio; Timken Roller Bearing Co., Canton, Ohio; Fickling & Fulton, New York City; Stearns Steam Carriage Co., Syracuse; Union Motor Truck Co., Philadelphia; American Coil Co., West Somerville, Mass.; Standard Automobile Co., New York City; the Motor & Gear Mfg. Co., New York City; Hyatt Roller Bearing Co., Harrison, N. J.; Whitlock Coil Pipe Co., New York City; Shelby Steel Tube Co., Pittsburg; Mfg. & Selling Co. of America, New York City; Electric Contract Co., New York City; Desberon Motor Car Co., New York City; Goodson Electric Ignition Co., New York City; Edison Storage Battery Co., Orange, N. J.; New Jersey Asbestos Co., New York City.

An indication of the interest that the trade in general is taking in the show, is the fact that the demand for trade tickets is greater than at any previous show. There is every reason to believe that more than 5,000 trade tickets will be bought by the exhibitors, to be distributed among their friends and customers. It is expected that the attendance of tradesmen and automobilists will be far greater than at any previous exhibition.

Arrangements have been made for the establishment of a Bureau of Information, which will be open three days before the opening of the show. Tradesmen will be required to register at this bureau before being admitted. Admission will be free to the trade up to 1 o'clock each day.

Manager Sanger, of the show, has given notice that the rule regarding

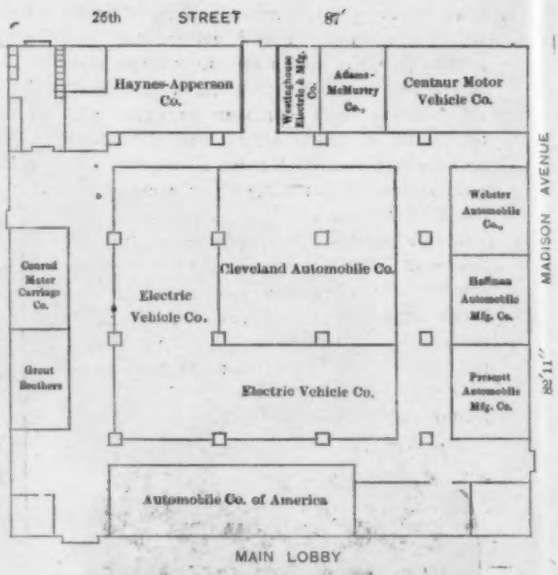
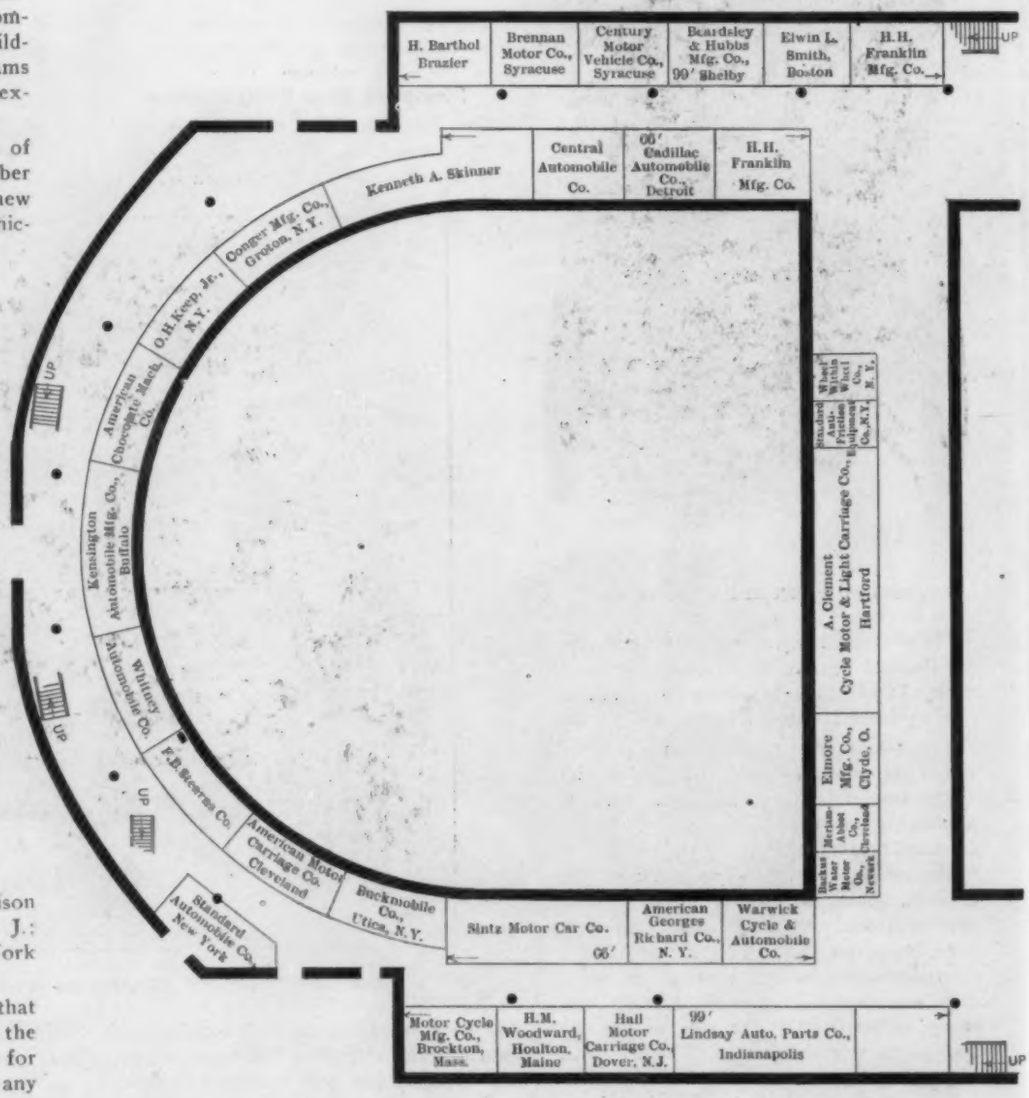


DIAGRAM OF RESTAURANT SPACES.


H. Barthol Brazier
Brennan Motor Co., Syracuse
Century Motor Vehicle Co., Syracuse
Beardsley & Hubbs Mfg. Co., 90' Shelby
Elwin L. Smith, Boston
H.H. Franklin Mfg. Co.
UP
Kenneth A. Skinner
Central Automobile Co.
66' Cadillac Automobile Co., Detroit
H.H. Franklin Mfg. Co.
Conger Mfg. Co., Groton, N.Y.
O.H. Kreg, Jr., N.Y.
American Chocolate Mach. Co.
Kensington Automobile Mfg. Co., Buffalo
Automobile Co.
F.B. Stearns Co.
American Motor Carriage Co. Cleveland
Buckmobile Co., Utica, N.Y.
Standard Automobile Co., New York
Sintz Motor Car Co.
66'
American Georges Richard Co., N.Y.
Warwick Cycle & Automobile Co.
A. Clement Cycle Motor & Light Carriage Co., Hartford
Elmore Mfg. Co., Clyde, O.
Motor Cycle Mfg. Co., Brockton, Mass.
H.M. Woodward, Houlton, Maine
Hall Motor Carriage Co., Dover, N.J.
99'
Lindsay Auto. Parts Co., Indianapolis
MADISON AVENUE
26th STREET

ARRANGEMENT OF BOOTHS IN BASEMENT OF MADISON SQUARE GARDEN.

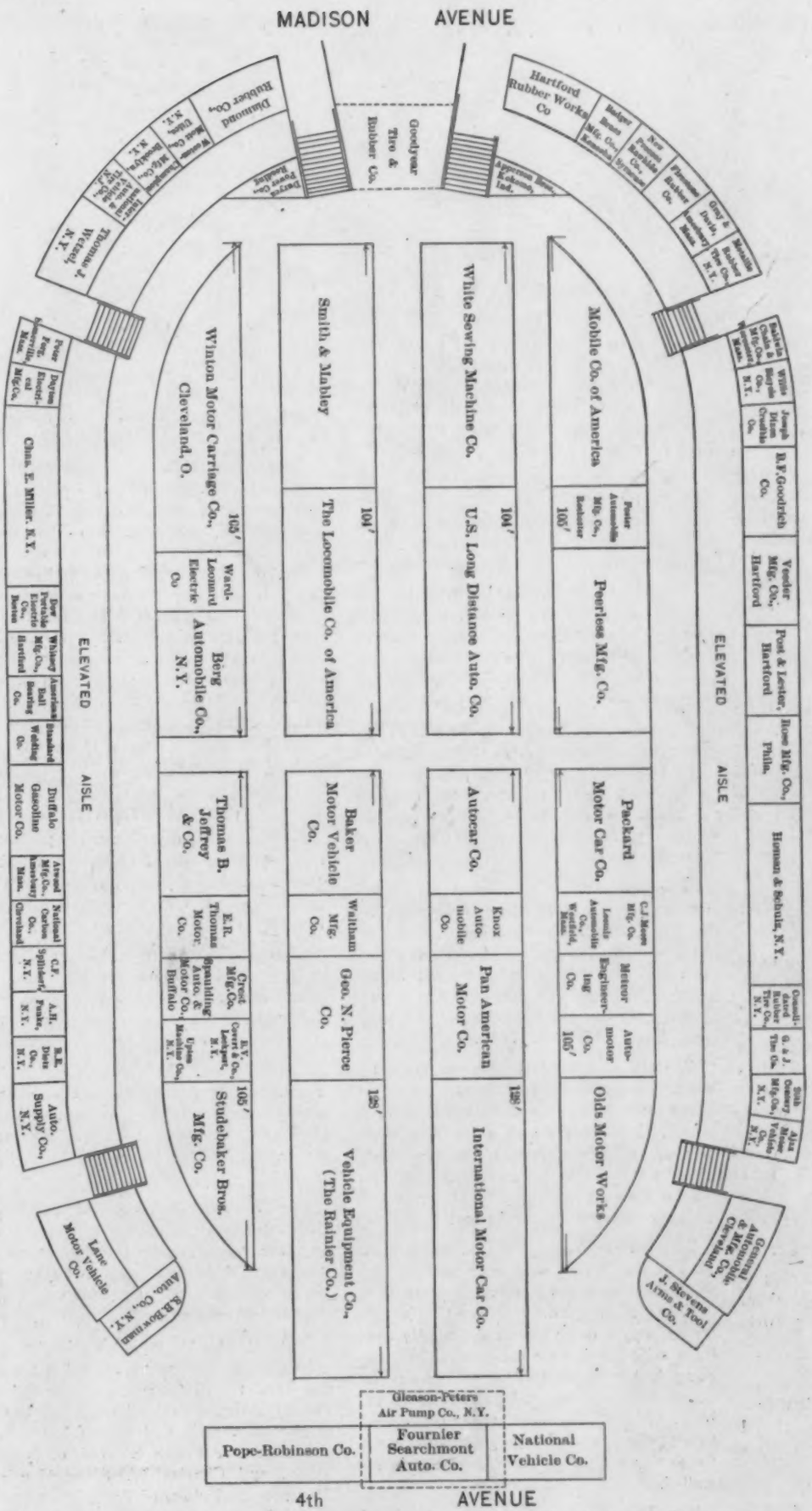


DIAGRAM OF SPACES ON MAIN FLOOR AND BALCONY OF MADISON SQUARE GARDEN.

gasoline will be strictly enforced. Under no circumstances will gasoline be allowed in the building, so that the demonstration of running power of cars will have to be made outside the building. Most of the makers have arranged to accommodate intending purchasers with exhibitions by having demonstrations outside. Interested parties can secure rides by applying at the maker's stand.

Although it was announced at first that Henry Fournier would not be able to show his cars at the Madison Square Garden show, owing to his late application for space, it now appears that he will be accommodated. An intending exhibitor found that he could not complete his product in time for the exhibition, and has assigned his space to Fournier, who sailed for America on *La Bretagne* last Sunday, together with his partner, M. Rabourdin; M. Charley, Paris agent for the Mercedes; and his secretary, M. Neubauer; and M. Clement, maker of the Clement cars. Fournier is bringing with him some of the latest types of French vehicles.

M. Charley, after attending the New York show, will go to Pittsburg, and then the Chicago show. Later, he will cross the Pacific to Australia.

Kenneth Skinner, of Boston, will return from Paris with the entire De Dion-Bouton exhibit at the Paris Salon, so that, with the Mors, Panhard and Renault cars to be shown by the American Automobile Storage Co., the Clement, by the A. Clement Cycle Motor & Light Carriage Co., the Decauville, by the Standard Automobile Co., the C. G. & V., the Panhard and the Renault, by Smith & Mabley, and the Georges Richard, by the American Georges Richard Co., there will be a good representation of vehicles from across the Atlantic.

PAN-AMERICAN MOTOR CO. PREPARES FOR LARGE BUSINESS.

The Pan-American Motor Company, of Mamaroneck, N. Y., has purchased the automobile factory at Marion, N. J., formerly occupied by the Automobile Company of America. It is not the intention, however, of the Pan-American company to occupy the Marion site permanently, but a factory will be built at some place, as yet not selected, between New York and Stamford, Conn., and the machinery purchased, which is valued at about $250,000 original price, will be removed to the new factory. In connection with this action the Pan-American company has increased its number of directors to nine and its capital stock to $500,000. The vice-president and general manager is James E. Woodbridge, who for many years was associated with the Pratt & Whitney Company, of Hartford, Conn. William M. Power is designing and consulting engineer. The company was organized by Albert C. Bostwick, who still holds a controlling or at least a large share of its stock. George F. Chamberlin is the company's attorney-at-law.

New York Electric Vehicle Store.

George H. Day, president of the Electric Vehicle Co., of Hartford, has closed the lease for a New York headquarters, to be at 134 to 138 W. 39th Street. The building is an ornamental structure of one story, twenty-five feet in the clear, and occupies a plot of ground seventy-five feet on the street and 100 feet deep. The entire front is of plate glass set in ornamental bronze framing, which gives a two-story effect. The building is forty feet west of Broadway and faces the Metropolitan Opera House. The interior is being fitted up in an appropriate manner, the exhibition space being large enough to show more than 100 automobiles. President Day anticipates having the opening about January 17, concurrent with the show at Madison Square Garden. The character of the building and the large floor space, together with the height in the clear, readily lend themselves to making an automobile repository which will rank among the handsomest in the city.

New Establishment for Rainier Co.

Work has begun on the construction of a four-story building at the corner of Broadway and Fiftieth streets, New York, to be used by the Rainier Co., selling agents for the Vehicle Equipment Co. and the Berg Automobile Co. Included in the new building, to be ready by April 1, will be show rooms, an extensive garage and complete facilities for repairing all types of automobiles. The show rooms will extend along the Broadway front. The entrance to the garage and repair department will be on Fiftieth Street.

Trade Brevities.

The Diamond Rubber Co.'s Boston branch office has been removed to 174 Columbus Avenue

The officers and directors of the Conrad Motor Carriage Co., of Buffalo, are mourning the loss of their president, Schuyler L. Fisher, who died on November 28.

Exports of motor vehicles and parts from the port of New York for the week ended January 3 are reported as follows: British Australia, $175; Cuba, $317; Liverpool, $1,400; London, $2,094.

The New York office of the Knox Automobile Co. will be removed on February 1 from 152 W. 38th Street to 146 W. 39th Street, where it will have much better and more convenient facilities for demonstrating its vehicles.

H. Fast, manufacturer of gasoline engines, transmission gearing, running gears and accessories, in Milwaukee, Wis., has changed the title of the business to the Fast Machine & Tool Works.

The Hartford Rubber Works Co. has moved its Cleveland branch to 77 Bank Street, where larger and better quarters have been secured. The company has done a very successful business in Cleveland. C. Cavanaugh is the local manager.

The Boston Automobile Exchange has taken temporary quarters at Station No. 1, 43 Columbus Avenue, Boston, until the completion of arrangements to establish a first-class automobile station near its former place of business in the Back Bay district.

The automobile station at 39 Wood Street, Reading, Pa., formerly conducted by Charles A. Miller, has been taken over by Harry O. Koller, who has been identified with the motor vehicle trade in the four counties about Reading for several years. He has the agencies for the Winton, Locomobile and Toledo.

S. W. Elston, representing the Waverley electric vehicles in Indianapolis, has had plans made to enlarge the present building on E. Ohio Street and make it a thoroughly modern garage. The new additions will include a large L in the rear and a whole new front. It is estimated that the improvements will cost $15,000.

The Tucker Wood Rim Co., whose plant at Urbana, Ohio, was destroyed by fire some time ago, has made arrangements to move to Sidney, Ohio., where the factory will occupy a large building formerly used by a school furniture concern. The company had a large number of orders on hand and could not take the time to rebuild. Sidney business men subscribed new stock and about 200 men will be put to work as soon as the machinery is installed.

The Detroit Post Office was tendered the use of three Oldsmobiles by the Olds Motor Works during the holiday rush. They make the circuit of the sub-stations in about 40 minutes, collecting seven or eight bags of mail each. Postmaster Dickerson asserted they were doing the work of fifteen horses and hoped the postal authorities would soon install an automobile service of its own.

The origin and success of the first exhibition of the Tri-State Automobile and Sporting Goods Association held in Detroit last February are presented in an attractive way in a folder issued by the association in promotion of its second show to be held from February 9 to 14 inclusive, next. Fourteen different makes of motor vehicles were displayed last year. William E. Metzger is president of the association and the secretary is Seneca G. Lewis, P. O. Box 5, Detroit, Mich.

The Automobile Exchange & Storage Co., at 135 W. 38th Street, New York, has changed hands and is now under the management of J. H. Robertson, formerly superintendent of the Third avenue street railroad. The interior of the establishment is being remodeled for the second time in fifteen months to facilitate the care of the increasing business. After the New York show a large assortment of American and foreign machines and a full line of sundries and parts for foreign machines will be carried. This station is just off of Broadway and is one of the largest in New York.

New Enterprises.

A new company, headed by Harold Smith and capitalized at $50,000, has been incorporated to manufacture machines and gasoline engines in W. Maryland Street, Indianapolis.

Charles A. Miller, who formerly had charge of the automobile station at 39 Wood Street, Reading, Pa., has taken up the manufacture of automobile brakes at 210 S. Madison Street.

The Motor & Gear Mfg. Co., of New York, has been incorporated at Albany with $25,000 capital to manufacture motor vehicles. The incorporators are John Lever, Jr., Thomas Myers and Alexander Howell.

The Park Square Automobile Station, of Boston, Mass., has been organized at Kittery, Me., to carry on a general automobile business. The capital stock is $25,000, and the promoters are Thornton Parker, who is president and treasurer; John N. Swanson, and A. Moriarty, all of Boston.

Incorporation papers have been taken out by the Hall Gasoline Engine Co., in Portland, Me., with $500,000 capital, to deal in yachts, vessels and automobiles. The promoters are Frank E. Hall, of Quincy, Mass., and Charles W. Richardson and Augustus A. Fuller, of Portland, Me. Mr. Richardson is president and Mr. Hall treasurer.

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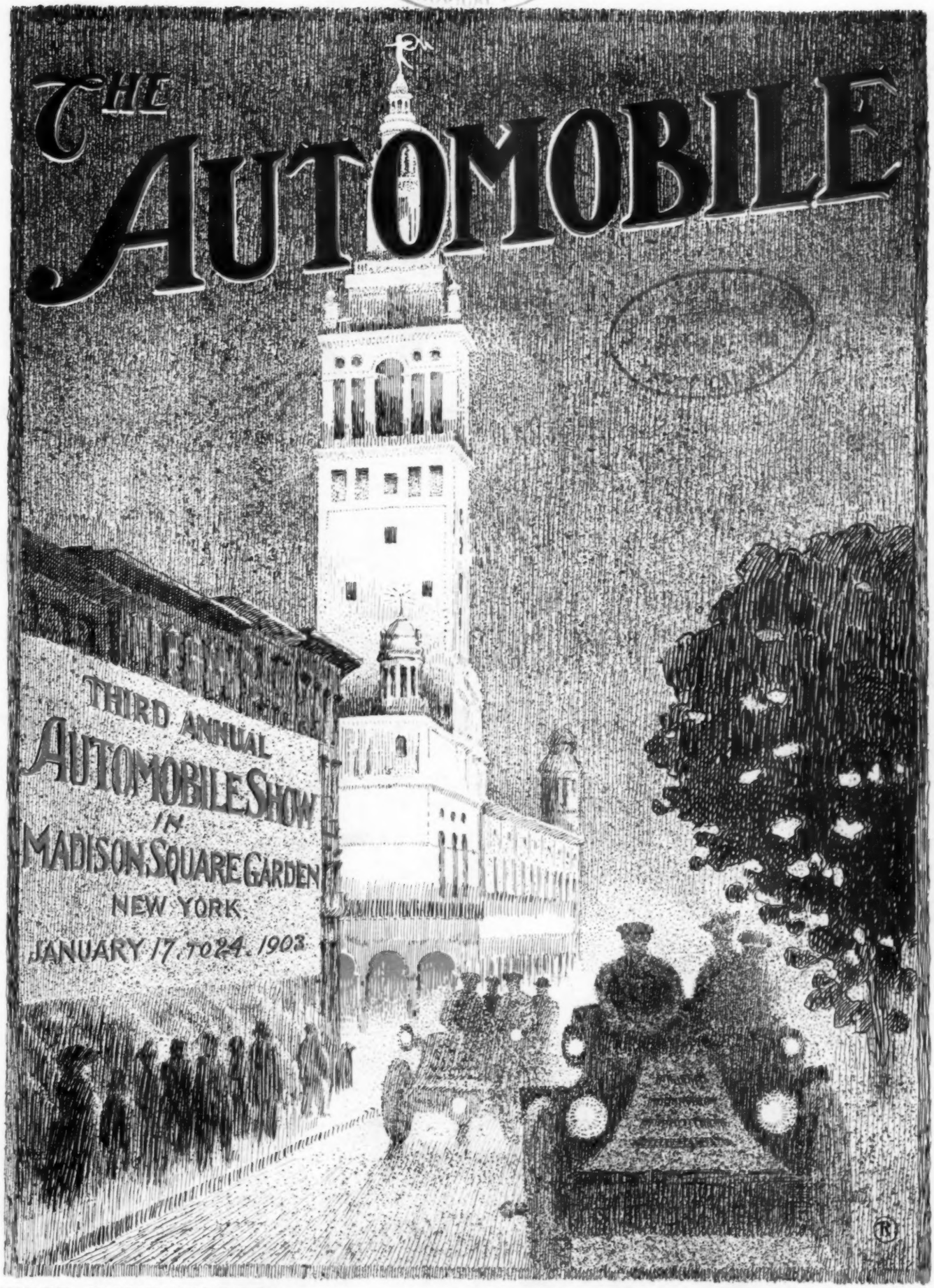
THE AUTOMOBILE



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